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LONGMANS'

SCHOOL GEOGRAPHY

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QUESTIONS BASED ON
LONGMANS' SCHOOL GEOGRAPHY.

By GEORGE G. CHISHOLM, M.A. B.Sc.

London: LONGMANS, GREEN, & CO.

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LONGMANS'

SCHOOL GEOGRAPHY

BY

GEORGE G. CHISHOLM, M.A., B.Sc.

FELLOW OF THE ROYAL GEOGRAPHICAL
AND STATISTICAL SOCIETIES

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PREFACE.

It is an unusual thing to prefix a long preface to an ordinary school-book, but the position which geographical teaching at present holds in this country makes it necessary to explain why a new departure is attempted, and what the nature of the new departure is. It is not long since we were told, on the authority of the Royal Geographical Society's Inspector of Geographical Education, that in this country geography is as a rule almost entirely neglected as a subject of education; and that among other reasons for this state of matters is the want of text-books fitted to aid teachers in putting the subject on a more satisfactory basis. We are also informed by the same authority that 'Germany may be taken as the model which all the other Continental countries are following, as far as their special circumstances will permit'; and it may be confidently asserted that all those who have bestowed adequate attention upon this matter are satisfied that, as with regard to the general methods of geographical teaching, so with respect to text-books in particular, Germany does in fact furnish us with the models most worthy of imitation. Why it should be so is easily understood when we consider the place which geography holds in that country in the universities and in the higher education generally; but in order to appreciate fully the service which Germany has rendered to geographical education, it is necessary to take into account the length of the experience of German educationists in the working of an advanced system of education in all departments.

In a country in which there has long been ample provision both for elementary education and for all intermediate stages leading up to the universities and to the best equipped commercial and technical schools, the teachers have at least been able to learn what is possible and what is impossible in school-years. Knowing that a limited period must be turned to account for the thorough teaching of a great variety of subjects, they have learned that it is impossible for school-teaching to be both thorough and full of minute detail. They have learned, accordingly, one of the most important of all lessons in educational method—to distinguish between what is indispensable as a groundwork and what it is better to neglect if the pupils are really to be educated, instead of having their minds overloaded, distracted, embarrassed, and perplexed.

This, then, is the particular in which the author of the present text-book has most earnestly endeavoured to guide himself by German examples, and he believes that on this feature it is impossible to lay too much stress. To those who are familiar with English text-books of geography the work now submitted to the public will hence perhaps appear more remarkable for what it omits than for what it contains.

But while this is really the case, while the author has really sought to exclude from the text-book almost all details which the pupils cannot be expected to keep permanently in mind, and can hardly attempt to keep in mind without doing injury in some way to their mental training, he has kept constantly before him the necessity for taking care that what the text-book does contain should be really foundational—should consist of what is most effective as discipline, most important to know.

In making this endeavour he has first of all sought to draw a mental picture of the different countries and regions of the world, giving due relief to what is most distinctive in each region. For this reason all countries are not treated according to a uniform plan, as if all the variety to be found on the surface of the globe could be held as adequately described by an enumeration of similar particulars under the same headings.

Secondly, while in order to make the picture of any country coherent, the relation between different features and characteristics is always kept in view, special prominence is given to the relation of cause and effect, so as to enable the pupils to realise that in geography there is something to understand as well as to commit to memory; in other words, so as to make geography a mental discipline as well as a body of instruction. Hence in selecting the particulars for notice under different headings special attention has been given to such as illustrate general laws. With this in view frequent references are made from the body of the book to the Introduction—which deals with the general facts of physical geography—and to other passages of the text which it is instructive to compare with those from which the reference is made. The Introduction, it may here be explained, is designed primarily for teachers, and is not intended to form part of the course for the pupils until they have gone through the whole of the body of the book; though it is expected that the references of which mention has just been made will always be taken advantage of to elucidate the text and heighten its interest.

The portion of the Introduction to which reference is most frequently made is that which briefly summarises the conditions most favourable to the growth of towns, and these references have been given in the belief that no part of geographical teaching can be made more fruitful and instructive. It is for this reason that while, in accordance with the general plan of the book, the number of towns mentioned is comparatively small, all the more space is devoted to giving geographical descriptions of the principal cities, so that the pupils may grasp the relations of their sites to the surrounding features. It is urged, therefore, upon teachers to cultivate in their pupils the habit of constantly referring to this section of the Introduction even where no special reference is given in the text.

So far as the author has succeeded in making the understanding work along with the memory it is a mere commonplace to say that to that extent the burden on the memory is reduced. Still, in geography as in almost every other branch of education, more or less mere memory work remains, and among the work of this nature the learning of latitudes and longitudes must certainly be included. The importance of this memory work, and more particularly of the learning of latitudes, which have peculiar significance in geography, cannot, however, be called in question; and, accordingly, special means have been adopted to help the pupils to acquire a correct knowledge of the relations in latitude of the most important places on the earth's surface. Attention has been drawn to such circumstances as enable one to understand the reasons for the differences in latitude between some of the most populous and most highly civilised countries in different parts of the world, where reasons can be assigned; and in other cases the memory will be assisted by the device explained in a note at the end of this preface.

With regard to other features of this text-book it may be noted that it is assumed throughout that no adequate teaching in geography can be given without the aid of maps. From the map alone can be gained a satisfactory knowledge of the position of different places, and from good maps it is possible, in some respects, to acquire a much more accurate idea of the character of the surface of the globe than can be gained from any description. A text-book ought, in fact, to be supplementary to an atlas and other aids to geographical education, and by no means to attempt to supersede them. Hence in the present text-book much is omitted not as being useless, but as being out of place.

In the spelling of foreign names an attempt is made to secure an approximation to consistency, for it is obvious that to accustom boys and girls to a rational system from their school-days is the likeliest way to arrive ultimately at uniformity of practice in this respect. The rules adopted by the Council of the Royal Geographical Society, and repeated at the end of this Preface, have, therefore, been followed in the text. It need hardly be explained that no more than an approximation to consistency is thereby secured, seeing that, as stated in Rule 2, many names—including most of those which naturally find a place in a school geography—are already too familiar under spellings not in harmony with the rules laid down. This, however, is matter for little regret, inasmuch as it forms in most cases no obstacle to the ultimate attainment of uniformity of practice.

The illustrations have been selected to exhibit some of the most characteristic scenes in different parts of the world, and most of them have been specially engraved by Mr. G. Pearson for the present work. For permission to use the diagram on p. 39 the author is indebted to the kindness of Professor Kirchhoff of the University of Halle, whose admirably compact *Schulgeographie* has served him to a large extent as a model for the present work, so far as was possible in the case of an English school-book, and so far as it is designed for pupils of the same standing as those for whom the present text-book is adapted.

Among other works to which the author has to express his special acknowledgments are: Professor Supan's *Lehrbuch der Geographie*; and, above all, the fifth edition (by Professor Wagner) of Guthe's *Lehrbuch der Geographie*; and for the British Isles the various works of Mr. Green, including the *Short Geography of the British Islands*, by J. R. Green and A. S. Green.

The author has also much pleasure in acknowledging his indebtedness to Mr. C. Colbeck, M.A., and Mr. F. E. Marshall, M.A., of Harrow School, for numerous improvements suggested by them in reading the proofs; but it is right to add that for the book as it stands the author is alone responsible.

NOTE.

In the paragraph devoted to latitude and longitude at the head of the principal sections into which the text is divided, a number of places in nearly the same latitude are always given. Those places which do not belong to the country or region with which the section deals are given in parentheses; and where they lie less than 180° to the west of the place named within such country, or region, they are printed to the left of that place, otherwise to the right.

The figures given in the text are always more or less round numbers, and especially where they represent variable numbers like populations, or indefinite numbers like the average height of plateaux.

Towns containing 100,000 inhabitants or more are printed in capitals. Where the population exceeds 200,000 it is stated in thousands in parentheses after the name of the town. Thus, **LIVERPOOL** (600) means that Liverpool has, in round numbers, 600,000 inhabitants.

The area of Great Britain, including the small islands adjacent—an area frequently employed in the text as a standard of comparison—is, in round numbers, 90,000 square miles. That of the island of Anglesey, which is sometimes similarly used, is about 300 square miles; that of Scotland (including islands) upwards of 30,000 square miles; that of Wales about 7,400 square miles.

For the sake of comparison it is also useful to bear in mind that, according to the estimate of the population of the British Isles for 1885, the average density was then just 300 to the square mile.

RULES ADOPTED BY THE COUNCIL OF THE ROYAL GEOGRAPHICAL SOCIETY AS TO THE SPELLING OF NATIVE NAMES OF PLACES.

1. No change will be made in the orthography of foreign names in countries which use Roman letters: thus Spanish, Portuguese, Dutch, &c., names will be spelt as by the respective nations.

2. Neither will any change be made in the spelling of such names in languages which are not written in Roman character as have become by long usage familiar to English readers: thus Calcutta, Cutch, Celebes, Mecca, &c., will be retained in their present form.

3. The true sound of the word as locally pronounced will be taken as the basis of the spelling.

4. An approximation, however, to the sound is alone aimed at. . . .

5. The broad feature of the system is that vowels are pronounced as in Italian, and consonants as in English.

6. One accent only is used, the acute, to denote the syllable on which stress is laid. . . .

7. Every letter is pronounced. When two vowels come together each one is sounded, though the result, when spoken quickly, is sometimes scarcely to be distinguished from a single sound, as in *ai*, *au*, *ei*.

8. Indian names are accepted as spelt in Hunter's *Gazetteer*.

The amplification of these rules is given below:—

Letters	Pronunciation and Remarks	Examples
a	*ah*, *a* as in *father*	Java, Banána, Somáli, Bari.
e	*eh*, *e* as in *benefit*	Tel-el-kebír, Oléleh, Yezo, Medina, Levúka, Peru.
i	English *e*; *i* as in *ravine*; the sound of *ee* in *beet*. Thus not *Feejee*, but	Fiji, Hindi.
o	*o* as in *mote*	Tokio.
u	long *u* as in *flute*; the sound of *oo* in *boot*. Thus, not *Zooloo*, but	Zulu, Sumatra.
	All vowels are shortened in sound by doubling the following consonant.	Yarra, Tanna, Mecca, Jidda, Bonny.
	Doubling of a vowel is only necessary where there is a distinct repetition of the single sound.	Nuulúa, Oosima.
ai	English *i* as in *ice*	Shanghai.
au	*ow* as in how. Thus, not *Foochow*, but	Fuchau.
ao	is slightly different from above	Macao.

Letters	Pronunciation and Remarks	Examples
ei	is the sound of the two Italian vowels, but is frequently slurred over, when it is scarcely to be distinguished from *ey* in English *they*.	Beirút, Beilúl.
b	English *b*.	
c	is always soft, but is so nearly the sound of *s* that it should be seldom used. If *Celebes* were not already recognised it would be written *Selebes*.	Celebes.
ch	is always soft as in *church*	Chingchin.
d	English *d*.	
f	English *f*. *ph* should not be used for the sound of *f*. Thus, not *Haiphong*, but	Haifong, Nafa.
g	is always hard. (Soft *g* is given by *j*)	Galápagos.
h	is always pronounced when inserted.	
j	English *j*. *Dj* should never be put for this sound.	Japan, Jinchuen.
k	English *k*. It should always be put for the hard *c*. Thus not *Corea*, but	Korea.
kh	The Oriental guttural	Khan.
gh	is another guttural, as in the Turkish	Dagh, Ghazi.
l m n	As in English.	
ng	has two separate sounds, the one hard as in the English word *finger*, the other as in *singer*. As these two sounds are rarely employed in the same locality, no attempt is made to distinguish between them.	
p	As in English.	
q	should never be employed; *qu* is given as *kw*.	Kwangtung.
r s t v w x	As in English	Sawákin.
y	is always a consonant, as in *yard*, and therefore should never be used as a terminal—*i* or *e* being substituted.	Kikúyu.
z	English *z*	Zulu.
	Accents should not generally be used, but where there is a very decided emphatic syllable or stress, which affects the sound of the word, it should be marked by an acute accent.	Tongatábu, Galápagos, Paláwan, Saráwak.

To this statement it need only be added that, in accordance with Rule 6 and the note at the end, accents are used in this text-book in the spelling of Indian names only where they indicate stress; that in certain more or less familiar spellings (such as Punjab, Bussora) *u* has the sound which it has in *but*; and that in some Russian names the combination *zh* is used to represent the sound of *z* in *azure*.

CONTENTS.

INTRODUCTION.

PAGE
I. MATHEMATICAL GEOGRAPHY: 16
- Form of the Earth . . 16
- Movements of the Earth . 17
  - Rotation. Latitude and Longitude . . . 17
  - Revolution. The Seasons 19

II. PHYSICAL GEOGRAPHY:

- Land and Water . . . 24
- Changes and Agents of Change 24
  - Modelling of the Land . 25
  - Rivers 26
  - Dissolving Action of Rain-water 29
  - Springs 30
  - Lakes 31
  - General Result of the Action of Running Water . . 32
  - Marine Deposits . . 32
  - Emergence of Marine Deposits 33
  - Folding of Strata . . 34
  - Mountain-building . . 34
  - Earthquakes . . . 34
  - Volcanoes 35
  - Underground Heat . . 36
  - Effect of Surface Inequalities on the Habitability of the Earth . . . 37

PAGE
- The Atmosphere . . . 38
  - Winds 38
- The Ocean 42
  - Temperature . . . 43
  - Movements of the Ocean: 43
    - Waves 43
    - Tides 43
    - Currents 45
  - Marine Life . . . 48
- Climate 49
  - Temperature and Rainfall . 49
    - Effects of the Relations of Sea and Land . . 50
    - Effects of Marine Currents 51
    - Effects of Superficial Configuration . . . 52
    - The Snow-line . . 53
    - Glaciers 53
    - Icebergs and Ocean Ice . 54
  - Salubrity 57
- Vegetation and Animal Life 57
- Man 59
  - Density of Population, &c. 59
  - The Growth and Position of Towns . . . 60
- Table showing the area and population of the great land-masses . . . 62

DESCRIPTION OF CONTINENTS AND COUNTRIES.

PAGE

- Europe: General 64
  - The British Isles . . . 72
  - England. 79
  - Scotland 114
  - Ireland 126
  - France 134
  - Belgium and Holland . . 144
  - Germany 151
  - The Alps 160
  - Switzerland 165
  - Austria-Hungary 170
  - The Eastern European Plain: Russia and Roumania. 179
  - Scandinavia 187
  - Denmark 191
  - The Iberian Peninsula . 192
  - Italy 200
  - The Balkan Peninsula . 208
  - Colonial and other Possessions of European Powers 215
- Asia: General 217
  - I. Countries outside of the Monsoon Region . . 222
    - Siberia 222
    - Russian Central Asia. . 224
    - Caucasia and Armenia . 225
    - Turkey-in-Asia 228
    - Arabia 233
    - Irania 234
  - II. The Monsoon Countries and their Dependencies . 236
    - India 236
    - Ceylon 247
    - Indo-China 247
    - Eastern Archipelago . . 249
    - China 252
    - Korea 258
    - Chinese Central Asia . . 259
    - Japan 260
- Africa: General 262
  - African Countries . . 266
    - Egypt 266
    - Independent Soudan . . 268
    - Western Mediterranean States 268
    - From the Senegal to the Congo 270
    - Congo Free State . . 271
    - Portuguese Lower Guinea . 272
    - British South Africa . . 272
    - East and South-east Africa 274
    - African Islands . . . 276
- America: General 278
- North America: General . 279
  - North American Countries . 282
    - Greenland 282
    - British North America . 283
      - A. Dominion of Canada . 283
      - B. Newfoundland . . 287
      - C. Bermudas . . . 287
    - United States 287
    - Mexico 294
    - Central America . . . 297
    - West Indies 298
- South America: General . 300
  - South American Countries . 304
    - Brazil 304
    - Colonial Guiana . . . 304
    - Venezuela 304
    - Colombia 305
    - Ecuador 305
    - Peru 306
    - Bolivia 307
    - Chile 308
    - Argentine Confederation . 308
    - Uruguay 309
    - Paraguay 309
    - Tierra del Fuego . . 309
    - Falkland Islands . . 309
- Australia and Oceania. . . 310
  - Australia 310
  - The Australasian Islands . 314
    - Tasmania 314
    - New Guinea 314
    - New Zealand 316
  - Polynesia 317
- Antarctic Regions 319
- Table of the Area and Population of the Principal Countries of the World 320

ILLUSTRATIONS.

FIG. PAGE

A BAMBOO THICKET. From *Unser Wissen von der Erde*. Reduced . . . . *Frontispiece*

1, 2, 3. DIAGRAMS TO ILLUSTRATE THE SEASONS 20, 21

4. DIAGRAM SHOWING THE ALTITUDE OF THE SUN AT DIFFERENT LATITUDES AT MIDSUMMER 21

5. DIAGRAM ILLUSTRATING THE DIFFERENCE IN THE DISTRIBUTION OF THE SUN'S RAYS AT THE SUMMER AND WINTER SOLSTICES IN THE LATITUDE OF LONDON 22

6. DIAGRAM ILLUSTRATING THE INCREASE IN THE LENGTH OF THE DAY FROM SOUTH TO NORTH AT MIDSUMMER IN THE NORTHERN HEMISPHERE 23

7. SAND-DUNES, DESERT OF SAHARA. From Nachtigal's *Sahara und Sudan* 26

8. DIAGRAM TO ILLUSTRATE THE ORIGIN OF SPRINGS 30

9. DIAGRAM TO ILLUSTRATE THE FORMATION OF ARTESIAN WELLS . 31

10. BOILING SPRINGS, UNITED STATES. From the *Report of the Geological and Geographical Survey of the U.S.: Montana, &c.*, 1872 36

11. THE GIANT GEYSER, UNITED STATES. From the same . . . 37

12. DIAGRAM TO ILLUSTRATE THE EFFECT OF THE ROTATION OF THE EARTH ON THE DIRECTION OF WINDS 39

13. ARCTIC ICEBERGS. From Hartwig's *Polar World* 55

14. SCENE IN A TROPICAL FOREST. From Hartwig's *Tropical World* . 56

15. A MANGROVE SWAMP. From *Unser Wissen von der Erde*. Reduced 58

SECTIONS ACROSS EUROPE, ASIA, AND NORTH AND SOUTH AMERICA . 63

16. THE PRICKLY PEAR 68

17. SECTION ACROSS THE NORTH OF ENGLAND 92

18. WINTER SCENE IN THE FEN COUNTRY (ENGLAND). From Heathcote's *Fen and Mere* 105

19. BRIDGE OF ST. JOHN'S COLLEGE, CAMBRIDGE. From a Photograph 108

20. FINGAL'S CAVE. From a Photograph 117

21. UNDERGROUND PASSAGE OF THE MASK. From *Cassell's Picturesque Europe*. Reduced 132

22. VIEW OF THE MONTS DÔME. From the Plates to Scrope's *Memoir on the Geology of Central France*. Reduced 137

23. WINDMILLS FOR THE DRAINING OF A POLDER. From *Harper's Magazine* 145

24. DIAGRAM ILLUSTRATING THE FOLDING OF STRATA IN THE ALPS. From Peschel's *Physische Erdkunde*. 160

25. SCENE IN THE SAXON SWITZERLAND. From *Unser Wissen von der Erde*. Reduced. 161

26. THE ALETSCH GLACIER. From a Photograph 163

27. THE LAKE OF GENEVA. From *Hirt's Bildertafeln*. . . . 167

FIG. PAGE
28. Scene in the Hungarian Pusstas. After *Stanford's Europe* . 173
29. Winter Travelling in Russia 181
30. An Encampment of Lapps. From S. Tromholt's *Under the Rays of the Aurora Borealis* . . . .
31. The Alhambra. From De Amicis' *L'Espa*
32. Front of a Venetian Palace. From *Cass*
33. A Street in Pompeii. From *Cassell'* Reduced . . . .
34. Mosque, Constantinople. From Lady *Storm* . . . .
35. Athens. From the same . . .
36. A Yurta. From Przhevalsky's *Mongoli*
37. Damascus. From the *Tour du Monde.*
38. Camel's Saddle. From Klunzinger's *U*
39. A Persian Water-wheel. From E. S *Wort und Bild* . . . . .
40. Ploughing with Zebus. From the sam
41. Mosque, Delhi. From the same. Red
42. Bangkok. From Mouhot's *Siam.* Redu
43. Temple of Angkor Wat. From F. Ga duced. . . . .
44. A Bamboo Thicket. From *Unser Wi* duced. . . . .
45. Lœss Terraces. From Richthofen's *C*
46. Gate at Shanghai. From the *Tour du*
47. Oasis in Fezzan. From Nachtigal's *S*
48. A Tembe. From Commander Cameron
49. Shoshong. From Oates's *Matabele La*
50. Scene in the Cañon Region. From *Tertiary History of the Cañon Distr*
51. A 'Lumbering' Scene. From G. A. S
52. St. Louis and the Mississippi. F *America* . . . . . .
53. Elevated Railway, New York. From
54. Cliff-Dwellings. From the *Report Geographical Survey of Colorado a*
55. Forest Scene, Sierra Nevada, U.S.
56. An Agave Plantation. From the *Atl los Estados Unidos Mexicanos* 297
57. Scene in the Pampas. From Hirt's 303
58. Scene in Honda. From the *Tour du Monde* 306
59. Fragment of an old Peruvian Wall. From Wiener's *Perou et Bolivie* 307
60. Pile-dwellings. From the *Narrative of the Cruise of the 'Challenger'* 315
61. An Atoll. From Lady Brassey's *Voyage of the Sunbeam* . . 318

Page 18, lines 13 and 14, [illegible]
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Page 126, line 11 from bottom, [illegible]
Page 154, second line of [illegible]
Page 168, last two lines of [illegible]
a single town with 100,000 [illegible]
Page 169, line 1 of notes, for [illegible]
Page 181, line 7, for [illegible]
Page 192, line 9, for [illegible]
Page 198, line 7 from bottom, for [illegible]
Page 233, notes, line [illegible]
Page 245, lines 12 and [illegible]
Holkar's Dominion [illegible]
Page 269, line 12 from [illegible]
Page 272, line 1, for [illegible]
Walvisch Bay, [illegible]
Page 279, line 12, for [illegible]
Page 287, line 5, for Port [illegible]
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Chisholm's Elementary Geography

CHOOL GEOGRAPHY.

INTRODUCTION.

s a Description of the Earth. No description can he shorter it is, the more necessary is it to have a n the description. Now it can scarcely be called in kind of knowledge of the earth that is of most use to us is that of the earth as the abode of man. of this kind is useful, however imparted; but in order eography should serve the purpose of genuine educa- te that the learners should be taught to understand ey learn so far as they can be understood. In few the aim of a text-book of Geography may be stated w the relation of the surface of the earth to its popu- where physical conditions favour and where they th of a dense and civilised population; where hin- en overcome, and where favouring conditions have d; to show how physical conditions affect the daily l over the globe; to show where large and where e been formed, and why; to show where large and are situated, and what circumstances have promoted ut even this is by no means a small task; to do it should rather be said, to attempt to do it fully, would

To an elementary knowledge of the relation of the surface of the to its inhabitants, it is necessary for various reasons to consider the earth as a whole. First, one requires to know something about the form of the earth and its position in space. This is what is usually included under the term **Mathematical Geography**; but out of the wide range of topics comprehended under this head we may select one or two as having most bearing on the main subject which we have to keep in view. Secondly, it is needful to know something of the surface of the earth as a whole, and of the changes that take place on the surface. This is what is designated **Physical Geography.**

I. MATHEMATICAL GEOGRAPHY.

Form of the Earth.—The earth is a ball. There are several ways of proving this. (1) It is found that when we look over a level surface of large extent (such as that of the sea), objects that come in sight from a distance are always seen first at the top, the lower parts coming gradually into view as we approach them, or they us. This shows that the level surface has, in fact, a swelling which hides the lower part of a distant object whose top is visible. In other words, the surface is curved. It is found, too, that objects of the same height come into view at the same distance all round, and that shows that the curve is equal in all directions—that is, the curve of a sphere.[1] (2) It is observed that the shadow of the earth thrown by the sun on the moon in eclipses of the latter body is always round, which would not be the case unless the earth had the form of a ball. (3) It is known that different points on the surface of the earth have different points of the sky (determined with reference to the stars), exactly overhead at the same moment, and that the same distance on the surface of the earth makes almost the same angular distance between the points of the sky overhead in all parts of the earth and in all directions.

This last method of proving that the earth is round affords the means of making the most exact measurements of the form of the earth, and by this method it is found that the spherical shape is not quite perfect. There is a flattening towards two points on opposite sides, but this flattening is relatively less than we see in an orange, so that the earth may be practically treated as a round body. This enables mathematicians to draw conclusions as to all its dimensions from a single measurement. Thus, if the distance between points on its surface be measured, and means be taken to ascertain what proportion of the whole circumference that distance represents (which can be done with the aid of the stars), then we can tell not only the circumference,[2] but also the length of radius and diameter, the area of the entire surface, and the cubic contents.

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[1] The circle bounding the view on a level surface is called the *horizon*. In the case of the heavenly bodies, all those belonging to one-half of the sky are above the horizon at one time.

[2] The circumference of the earth is the distance round its widest part; the radius, any line from the centre to the surface; the diameter, a line passing from side to side through the centre, and hence twice the length of the radius. In round numbers, the length of the radius is 4,000 miles, the circumference accordingly nearly 25,000 miles.

Movements of the Earth. First Movement: Rotation.—The earth is not fixed in space. It has two movements, which have very important effects. First, there is a spinning movement of rotation, as it is called, round a line (called the **axis**) passing through the centre of the earth, and having its ends at the points towards which the surface is observed to become flattened. This line always points in the same direction, and the fact of the movement is observed with the aid of the heavenly bodies, the stars and the sun and moon. The movement is from west to east, and as it brings the people on the earth face to face with different parts of the sky, and consequently different stars, it makes it appear as if the stars were revolving from east to west round the earth, or rather round the axis pointing to a fixed spot in the sky. The spots towards which the opposite ends of the axis points are called the **poles of the heavens**, the **North Pole** and the **South Pole**, and the same names are given to the ends of the axis itself. In the case of the North Pole, there is a bright star very near the fixed point of the sky, and that star is therefore called the pole star; by looking at it on a clear night we can always tell the direction in which the North Pole of our earth lies.[1]

The importance of the movement of rotation to the inhabitants of the earth arises from the fact that it causes the alternation of **day and night**, by bringing at different times different parts of the earth opposite the sun.

Latitude and Longitude.—This movement of the earth has also the practical advantage of giving us two fixed points with reference to which we can determine the position of other points on the surface.

Circles are imagined as passing round the earth, and through both poles. Each of these is divided into 360 intervals called degrees, each of which subtends an angle of one degree (or $\frac{1}{90}$th of a right angle) at the centre of the earth.

A circle conceived as crossing these circles at points 90° from each pole is called the **equator**, because it divides the surface of the earth into two equal parts called the **Northern** and **Southern Hemispheres.**

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[1] The most convenient way of ascertaining the direction of the North Pole is by means of the compass, the essential part of which is a magnet suspended on a pin by the middle. When so suspended, a magnet always points more or less to the north and south; but it does not point exactly in that direction, and its divergence from that direction differs in different places and at different periods. There are slight variations in the direction in the course of the day, more considerable variations in the course of the year, and still more considerable variations in the course of longer periods. In our country the compass-needle points at present about 18° to the west of north.

Other circles conceived as crossing those which pass through the poles, each at some fixed number of degrees from the equator, are called **parallels of latitude.** Each of these parallels is clearly at one uniform distance from the equator throughout, as also from any other parallel of latitude. Hence a degree of latitude would be everywhere of the same length if the earth were an exact sphere, but it is in fact slightly longer near the poles, in consequence of the flattening above referred to.

Degrees of latitude are numbered from the equator towards either pole. There are therefore 90 degrees of latitude to the north, and 90 to the south of the equator. Each degree is divided by similarly drawn circles into 60 **minutes**, and each minute into 60 **seconds.** Degrees, minutes, and seconds are respectively represented by the signs ° ′ ″.

The circles which pass through the poles are called **circles of latitude.** Half such a circle is also called **a meridian,**[1] because all places on it have noon at the same instant. It is then midnight at all places on the other half of the same circle.

Longitude is measured by degrees which denote the angles which the planes of the successive meridians make with one another. There is no natural starting-point from which to measure longitude; hence different starting-points have been chosen. That which is now generally adopted is the one that passes through the Royal Observatory at Greenwich. From it 180 degrees of longitude are counted west, and 180 east.

It thus appears that we can define the position of any spot on the earth's surface by determining its longitude and latitude. These can be ascertained by observations of the sun and stars, and the position of that place can then be accurately laid down on the map. A town which is 56° 30′ N. latitude and 17° 14′ E. longitude is at the point where the parallel and meridian named meet.

Since the meridians converge towards the poles, and are most widely separate at the equator, the distance covered by one degree of longitude diminishes continually as you follow the meridians from the equator towards the pole. Thus at the equator it is rather more than 69 miles, at latitude 45° rather less than 49 miles, at latitude 89° (one degree from the pole) only about one mile and a fifth. Hence the length of each parallel of latitude, which is divided into 360 such degrees, continually diminishes also. Now a parallel of latitude represents the daily motion of any point on it. Therefore the higher the latitude of any place the less is its velocity from the rotation of the earth.

Since the sun passes over every meridian once in twenty-four hours, it passes through 360° of longitude in that time, or 1° in four minutes of time. Hence noon is 4 minutes later for every degree of longitude that any place is west of Greenwich, and earlier by 4 minutes for every degree that it is east of Greenwich.

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[1] Lat. *meridies*, midday.

Second Motion of the Earth: Revolution.—The second motion of the earth is also detected by means of the heavenly bodies. When we observe the sun at rising or setting all through the year, we find that the stars last seen near the point of rising or first seen near the point of setting are not always the same. The sun appears to describe a circle in the heavens in the course of a year, constantly moving towards stars farther east. The path in which the sun thus appears to move is called the **ecliptic**, because it is that tract of the sky in or near which eclipses take place. We now know that it is not a movement of the sun itself, but a movement of the earth round the sun causing the latter body to come in succession opposite different parts of the sky. The earth is, in fact, only one of several bodies called **planets** which move round the sun, and form with it the solar system; the other planets being stars, which are observed to change their position in comparatively short periods among the other stars. The moon is an attendant on the earth or satellite, which moves in the same way round our globe at a distance of about 240,000 miles (sometimes greater, sometimes less). The distance of the earth from the sun also varies a little.[1] The average distance is about 93 millions of miles, or nearly 400 times that of the moon.[2]

The Seasons.—This motion of the earth round the sun is the cause of the seasons. It is so because the axis of the earth always points to the same spot in the heavens, and is not at right angles to the plane of the earth's orbit, but is inclined to that plane at an angle of 23½°. The effect of the tilt of the axis away from the perpendicular is at once apparent on comparing Figs. 1 and 2. Fig 1 shows the position of the axis in which the sun would be always overhead at the equator, and in which there would be an alternation of equal days and nights all over the globe all the year round. Fig. 2 shows the actual position of the axis at two opposite points of the orbit, in one of which the sun is overhead at a parallel of latitude as far as possible to the north of the equator (23½°), and in the other of which it is overhead at the corresponding parallel south of the equator. The former is the midsummer position for the northern hemisphere (June 21), the latter that of midwinter for the same hemisphere (Dec. 21). Now it will be observed that in both positions there is a circle round one pole within which no light can reach the earth from the sun during an entire rotation, and at the opposite pole another circle which will remain constantly in daylight. The distance of each of these latter circles from the respective poles is again 23½°. The parallel of latitude at which the sun is directly overhead in its midsummer position for the northern hemisphere is called the **Tropic of Cancer**, that in which the same thing happens at midwinter, the **Tropic of Capricorn**, and the circles which lie at the same distance from either pole are called respectively the **Arctic Circle** (in the northern hemisphere) and the **Antarctic** (in the southern).

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[1] The path or orbit in which the earth moves is not an exact circle but an ellipse, so nearly a true circle that if its precise form were drawn on paper it could scarcely be distinguished from a circle by the eye. The sun is in one of the foci of the ellipse, consequently nearer one end of it than the other: hence the variations in distance spoken of in the text. The moon has a similar orbit.

[2] Seeing that the sun and moon appear nearly equal to the eye, while the distance of the former body from the earth is so enormously greater than that of the latter, it follows that the sun must be enormously larger than the moon. The diameter of the sun is, in fact, more than a hundred times as great as that of the earth; that of the moon not much more than one-fourth as great. Within the body of the sun there would be room enough for both earth and moon at the distance by which they are actually separated from each other, and even for the moon to revolve round the earth without passing far beyond the centre of the sun, if it touched the outer edge in one part of its orbit.

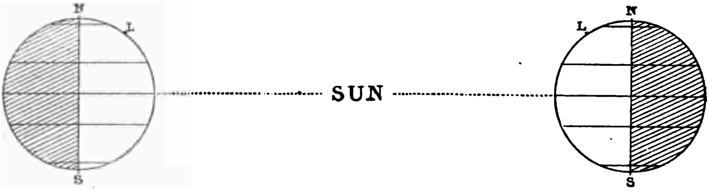

FIG. 1.—(L indicates the latitude of London.)

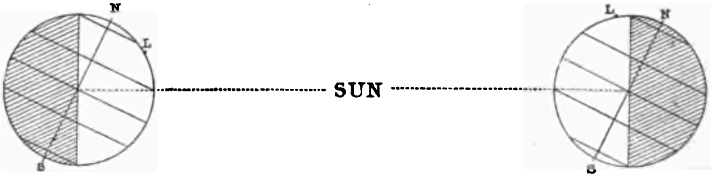

FIG. 2.—(L indicates the latitude of London.)

Fig. 3 illustrates the gradual passage of the earth from one position to another, and shows that in passing from the midsummer to the midwinter position of the northern hemisphere, and again from the latter to the former, the earth reaches two positions, the **vernal and autumnal equinoxes** (March 21, September 23), in which the sun is directly overhead at the equator, and in which day and night are equal all over the world. Between the vernal and autumnal equinoxes the sun is overhead at some point or other in the belt between the equator and the Tropic of Cancer, and the nearer it is to the latter the larger is the circle of perpetual light round the North Pole and of perpetual darkness round the South. Hence, too, within the Arctic Circle, the nearer a place is to the North Pole the longer will be its periods of light in our summer and darkness in our winter. The reverse holds good during the other half of the year. At either pole the periods of light and darkness last about six months. The diagram thus also makes it plain that winter and summer occur at opposite periods of the year in the northern and southern hemispheres.

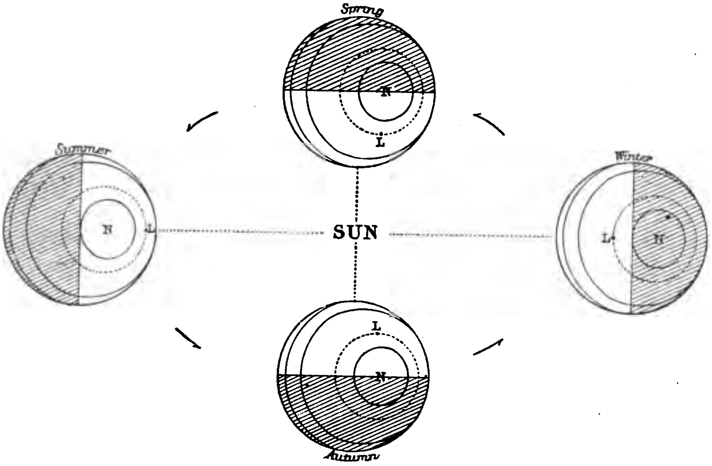

Fig. 3.—(L indicates the latitude of London.)

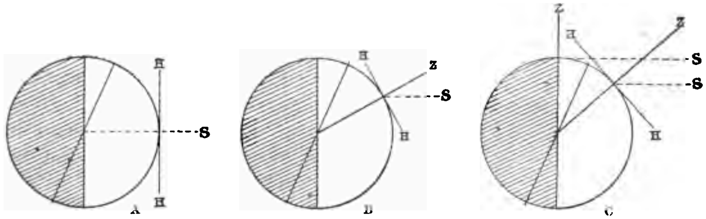

Fig. 4.—Illustrating the altitude of the sun at midsummer in the northern hemisphere, A at the Tropic of Cancer, B at the latitude of London, C at opposite points on the Arctic Circle. Z the zenith.

The areas of the earth bounded by the circles just mentioned are called **zones** or belts, and receive special names from the general effect of the heat of the sun within them. The strength of the sun's rays on the surface of the earth increases with the height of the sun—first, because the higher the sun is in the sky the smaller is the surface on which its rays are expended, and, secondly, because the higher it is the less is the thickness of the atmosphere through which the rays pass, and the less heat therefore is intercepted in the passage. An examination of figs. 4 and 5 will make these facts plainer. In fig. 4 it is seen that the altitude of the sun, or the angle which the line pointing to S makes with the horizon (H), steadily diminishes from the Tropic of Cancer to the furthest limit of the Arctic Circle, on one point of which the sun is just on the horizon. Fig. 5 shows the effect of differences in the height of the sun on the distribution of an equal band of rays (*a b*) on the surface of the earth (*c d*).

From the facts above stated, it follows that the part of the earth within the tropics, where the sun is always overhead at some part, is the hottest as a whole, and is for that reason called the **torrid zone**; the parts round the poles are called the **north and south frigid zones**, as being the coldest; and the intervening zones are called the **north and south temperate zones**. But we shall afterwards see that there are other circumstances besides the height of the sun which have an important effect on climate, and that these consequently are not true zones of climate, but merely zones of illumination.

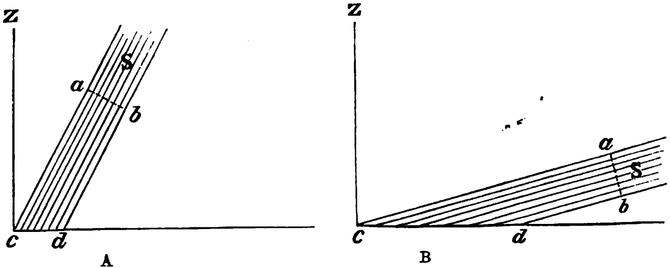

FIG. 5.—Showing the difference in the distribution of the sun's rays at London at midsummer (A), and at midwinter (B).

Though the temperate zones have a regular alternation of day and night all the year round, it must be borne in mind that there is no sudden increase in the length of daylight as we cross the Arctic or Antarctic Circle. The days of summer become longer, those of winter shorter, the nearer we advance to either pole. This will be at once plain from Fig. 6, which shows the extent of daylight on the earth when the sun is in its midsummer position for the northern hemisphere (directly overhead at the Tropic of Cancer), and when it is midday at London. It is clear that all places in latitude 50° N. are then in daylight from rather more than 120° W., where the sun is just rising, to rather more than 120° E., where it is just setting. There are therefore more than 240° of this parallel in light, and since the earth turns through 15° in an hour, a place in latitude 50° will have more than 16 hours of daylight. Similarly, a place in latitude 20° N. will have 13½ hours of daylight. It follows that, though latitude is no sure indication of climate, places in the same latitude agree with one another at all periods of the year in the length of the day—a fact of importance with reference to the habitability and civilisation of the earth in more ways than one. It is the long days of summer which enable grain to be grown in the short time available in one or two parts of the world near the northern limit of the temperate zone (in Norway even beyond it); and it is at least worthy of note that all the oldest civilisations both in the Old World and the New (in the Old World, those of China, India, Assyria, Egypt, Greece, Rome; in the New World, those of Mexico and Peru) rose in latitudes where the shortest day is nearly ten hours long or longer.[1]

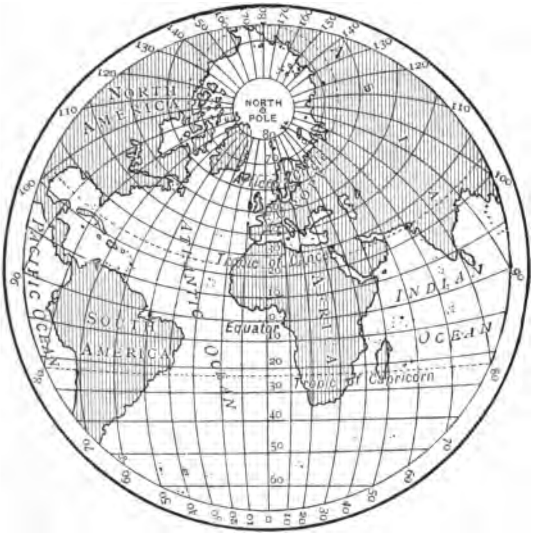

FIG. 6.

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[1] This advantage enables artificial light to be more easily dispensed with—a matter of no little consequence where artificial light is dear, or before the advance of civilisation made it cheap.

II. PHYSICAL GEOGRAPHY.

Land and Water.

The total area of the water surface of the earth is about 144½ millions of square miles, that of the land surface about 55½ millions; the ratio of the one to the other consequently about 11:4. Three-fourths of the land surface of the earth lies in the northern hemisphere; and, what is still more important, the two great land masses of the northern hemisphere, North America with Greenland and the Eurasian[1] continent, spread out in the east and west so as to leave only narrow communications with the Arctic Ocean, while the two great continents of the south, South America and Africa, taper to narrow peninsulas, leaving wide stretches of ocean between each other. The freedom of communication between the Arctic Ocean and the South is found to be still further diminished when we take the depth into consideration. Behring's Strait has an average depth of less than 60 fathoms, and a submerged bank 500 fathoms below the surface connects Iceland with Europe. Less is known about the depth of the Antarctic Ocean; but, so far as it has been explored, the depth would appear to decrease gradually southwards.

When eastern and western hemispheres are compared the greater proportion of land is found in the former; and when we divide the earth into two hemispheres, one containing the greatest possible amount of land and the other the same of water, it is found that Great Britain as a whole occupies nearly the centre of the former. The average depth of the ocean is enormously greater than the average height of the land. The former is estimated at about 2,000 fathoms or 12,000 feet, the latter at about 1,500 feet, so that the ocean could receive all the land of the earth above water's edge at least twenty times over. The continents must therefore be conceived as vast plateaux[2] rising to so great a height above the ocean bed that the mountains on their surface are in respect of their mass relatively insignificant.

Changes and Agents of Change.

The outlines of the continents are not permanent. There is the clearest evidence to show that sea and land are constantly, though slowly, changing places to a certain extent. On the other hand, it has now been shown to be extremely probable that the great oceans as a whole have occupied the present great troughs from a period incalculably remote, and that the continents, though submerged now at one place, now at another, have remained similarly, as a whole, pretty much in their present positions. The margins of the sea and land have been mostly subject to change, and the whole of what may be called the unstable area (liable to be at one time sea, at another land) has been estimated at equal to about one-fourth of the entire surface of the earth. The unstable area of the ocean is generally indicated by its comparative shallowness.

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[1] Eurasia is a name frequently applied to the combined continents of Europe and Asia.

[2] A plateau or table-land is a region or district with a uniformly high or moderately high level (above the sea or above the surrounding country).

Modelling of the Land.—Various agents are constantly at work reducing the harder parts of the crust of the earth[1] to small particles and even to powder, and others in carrying this crumbled material from higher to lower levels. There are three chief crumbling agents. (1) In dry countries, which are all liable to extremes of heat and cold within short periods,[2] these **variations of temperature** causing alternate expansion and contraction of the surface of the rocks, lead to the splitting off of scales and fragments, which become strewn at the base. In the absence of water, wind is the principal agent in carrying these fragments to still lower levels; for, though the dust may be whirled high in the air and may even settle on higher levels after a particular gust, the tendency on the whole is downwards. By this means vast areas in the interior of Africa and North America have got covered with loose matter brought from a distance of thousands of miles; in Asia great cities (Babylon and Nineveh) have been buried, and wide and deep valleys are said to have been filled by the same process.[3] In distributing the loose matter which they carry the winds act differently in different circumstances. In some cases, where they blow with constancy over vast plains or level plateaux, they build up **sand-dunes** or mounds of sand, with a gentle slope on the side turned towards the wind, and a steeper slope on the opposite side. Sand-dunes so formed are not fixed in position, but travel slowly along in the direction of the wind, the change in place being due to the same process as that by which they are formed. The loose sand from the gentle slope on the wind side is blown over the top and falls down the steeper slope on the other side, while fresh sand is constantly raised from the plain. In other places where the winds are less constant the loose sand may be distributed pretty equally over the surface, and hence in dry regions mountains are often seen to rise with remarkable abruptness from very level plains at their base.[4] (2) In moist countries, with a vigorous vegetation but with little frost, the work of disintegration is principally performed by the **roots of plants**, which as they thicken act as powerful wedges and open the cracks even in hard rocks, and in some cases by their juices dissolve the rock; but (3) **frost** is probably the most powerful crumbling agent of all, and attacks the rocks all the more fiercely the more they are ramified by fissures and permeated by pores. Rain fills the cracks and enters the pores, and, as water in freezing expands with great force, large masses or small particles are burst off, and ultimately fall down through their own weight, or are easily washed off by subsequent rains. Every muddy drop that we see trickling down a hill slope after a shower of rain is a sign and an illustration of the processes just described, and thus enables us to see how the valleys are widened and the mountains carved. At the bottom of the valley the action of the rain is continued by the rills and larger streams which are ultimately formed.

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[1] The term crust of the earth is applied to the few thousand feet beneath the surface which can be brought within the reach of our observation, and is not intended to imply that the outer part of the earth is a hard coat of armour surrounding a fluid interior.

[2] See p. 52-3.

[3] See p. 254 *n*. 3.

[4] See cut, p. 275.

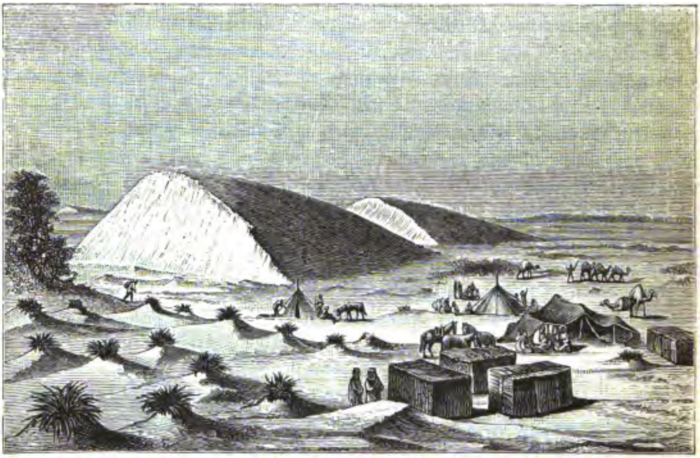

FIG. 7.—SAND-DUNES, DESERT OF SAHARA.

Rivers.—The area from which the water of a river is collected is called its **basin**, and the boundary of a river-basin, except where it borders the sea, is likewise the boundary of adjoining basins, and thus forms a **water-parting**, or line from which the water flows in different directions on opposite sides. Frequently a water-parting is the crest of a chain of mountains, but in many other cases it is only a slight swelling in a valley (Kur, Rion),[1] and it is by no means an uncommon thing for rivers to have cut a channel right across mountain chains.[2]

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[1] See p. 226.

[2] See pp. 98, 219, 237, 280, &c.

A few instances are known in which **bifurcations**[1] take place where there is no proper water-parting, but part of the same channel of water flows in one direction, part in another. More frequently the same lake has outlets in different directions. Several examples of this occur in the Rocky Mountains, lakes sending waters on one side to the Pacific, on the other to the Atlantic, ocean.[2]

As an agent of change a river wears away the land at one part, and deposits material in another part. The course of a typical river is divided into three parts—an **upper, a middle, and a lower course.** In the upper part of its course the fall or slope of the bed is steepest, and hence the wearing or eroding action is most rapid and predominates over deposition, the energy of the action being due not only to the swiftness of the current, but still more, probably, to the gritty matter which it carries along with it. The upper part of a river thus tends to recede higher and higher up a valley; or, to use the phrase frequently employed, a river eats back its head. In the middle course of the river erosion and deposition are more equally balanced, the river eroding where its current is swiftest (on the concave or hollow side of winding banks,[3] &c.), and depositing where it is slowest (on the convex side of winding banks,[4] &c.). In the lower course of the river deposition predominates over erosion, and almost all the matter still retained by a river in suspension is deposited at the mouth, where the flow is checked by the sea or lake into which the river empties itself. Frequently from this cause there is formed at the mouth of a river a **bar** or submarine ridge which prevents the entrance of vessels drawing above a certain depth.

When the matter laid down at the mouth of a river rises above the surface it forms a **delta.** Usually a delta is traversed by several branches of the river, whence the name, which was first applied to the delta of the Nile, the outer branches of which, along with the seaboard, form a Δ (the Greek letter for D). Occasionally, however, the river remains undivided, and traverses a true delta or deposit of alluvial matter in a single stream.

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[1] The most noted example is that of the Casiquiare, which belongs both to the basin of the Amazon and that of the Orinoco.

[2] The name Two Ocean Pass is given from this circumstance to a particular pass in the Yellowstone Region (lat. 44° N. 110° W.)

[3] The banks of a river are known as *right* and *left*, according as they are on the right or left hand of a person looking in the direction in which the river flows.

[4] The convex side thus tends to grow more and more outwards, the concave side to become more and more hollow, till at last the river may burst through the neck on the inner side of the convex protuberance. The Isle of Dogs, in the East End of London, is a good illustration of a deposit formed in this way, but the neck connecting it with the land is now protected by artificial embankments.

From the mode of their formation, deltas are frequently flooded, and as every flood tends to raise the river banks, while the bed of the river is also being constantly raised, it follows that the river branches in a delta almost always run along natural embankments above the level of the surrounding surface, until, perhaps, the side of an embankment is broken through and a new channel formed along another line.

Altogether, the course of a river is a scene of constant change. Only where a stream has worn for itself a deep gorge in hard rock does its channel become a permanent one, and in such places the changes are chiefly in the swiftness and depth of the current. Such gorges are specially characteristic in dry regions, where the river derives little assistance from rain, frost, and vegetation in widening its valley; and the most remarkable examples of the kind are the **cañons** of the Rocky Mountains in Western North America,[1] the rivers of which are fed chiefly by melting snow near the source, and have their own erosive action assisted by the rapid fall of the bed.

The action of a river is variously modified by the tributaries which it receives on both its banks. Each tributary, with the assistance of its feeders and trickling waters, tends to form a valley of its own, and when it joins the main stream it not only adds to its volume, but has other effects according to circumstances. It generally aids more or less in eating away the bank of the main stream opposite to the influx, and thus to shift the course of the latter in that direction. This effect is greatest when the tributary is impetuous, and its course at right angles to that of the main stream, as in the case of some of the tributaries of the Theiss in Hungary. But at the actual point of junction the course of a tributary hardly ever has such a direction, for, as its current is more or less checked at the confluence, alluvial matter is always laid down at the inner angle between the main stream and its feeder, so that a wedge of such deposits tends to grow longer and longer in that situation, pushing the mouth of the tributary along more or less in the direction of the course of the main stream. By the continuation of this process the tributary may ultimately get wedged off altogether, and finally enter the sea as an independent stream.

The **navigation of a river**, which has so great an effect on the distribution of population on its banks, depends not only on the depth of its water, but also on the rate of flow (that again on the volume of water and the directness of the course as well as on the fall or slope of the bed) and the freedom from waterfalls and shallow rapids; and the advantage of a river for navigation is often greatly reduced by the length of its windings.

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[1] See p. 293, and illustration p. 281.

The Dissolving Action of Rain-water.—The action of water in wearing away the land drained by rivers is not confined to the surface. Rain-water sinks into the ground sometimes to an enormous depth, the depth depending on the thickness of porous rocks. In doing so it may become muddy from the washing away of solid particles, just as when it trickles down a hill slope, but it exercises a much more powerful action in many cases in another way. There are many substances which rain-water can dissolve,[1] as water dissolves salt or sugar, causing them to disappear wholly from sight. Various soluble salts are always present in the ground, and hence rivers always contain a certain proportion of salt, though seldom enough to impart a salt taste. Carbonate of lime, of which chalk, limestone, and marble are three different forms, and which, accordingly, is one of the most widely diffused substances in nature, is easily acted on by rain-water in this way; where such rocks abound, **caves** are apt to be formed by the continual action of rain-water filtering in through pores and fissures,[2] and further consequences ensue from this process. Sometimes the hollows in limestone rock and the openings into them are so enlarged that considerable streams may precipitate themselves into them and continue their course for a time underground. Underground rivers are consequently a frequent characteristic of limestone regions.[3] Generally these rivers re-emerge at some point on the surface of the land, but sometimes they find their outlet under the sea. Sometimes the overlying crust of the earth is left by the process of cave-making without support and falls in, so that basin-shaped hollows take the place of subterranean caves.[4] Very frequently floor and roof in a cave are connected by a magnificent array of picturesque or fantastic pillars, which are themselves the result of the process by which the caves are made. For the process of cave-making is a slow one. It is carried on by the water, drop by drop. Each drop dissolves a little of the limestone; but where the percolation of the water is very slow, each drop as it hangs on the roof of the cave partly evaporates, and the carbonate of lime that had been dissolved in the evaporated water is left as a thin crust on the roof. Subsequent drops enlarge and elongate this crust till what is called a **stalactite**[5] is formed. The same process goes on beneath on the floor of the cave where the drop falls, and so, in course of time, a column of carbonate of lime, to which the name of **stalagmite** is given, is built up from the floor, and the meeting of the two forms a pillar, which the continuation of the process thickens and models.

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[1] This dissolving power rain-water owes chiefly to the fact that it always contains a certain proportion of carbonic acid derived from the atmosphere.

[2] See pp. 96, 111 *n.* 6, &c.

[3] See p. 110, *n.* 2, &c.

[4] See p. 177.

[5] See cut, p. 182.

Springs.—Even where the rocks are less easily acted on than limestone and its allies, the action of underground water is important. It is to this water that springs owe their origin. Deep as water may sink in certain kinds of rock, whether porous or traversed by numerous inter-ramifying fissures, it is stopped by other kinds which are practically impermeable to water. So stopped, it creeps along the junction between the permeable and impermeable rock till it finds an issue on the surface of the ground in the form of a spring, which drains so much of the porous rock as lies above its own level (Fig. 8). Such being their origin, springs always contain some substances in solution derived from the rocks through which the water that feeds them has percolated. Hence many are known as mineral springs, and among these not a few have a repute on account of their medicinal action. Where the water comes from a great depth below the surface it is always warm,[1] and, as warm water is capable of dissolving many substances which cold water (even rain-water) cannot dissolve, hot springs are always richer in dissolved minerals, and more frequently than cold ones have a medicinal reputation. One widely diffused substance, silica,[2] is as readily dissolved by very hot underground water as carbonate of lime is by cold, and hence deposits of silica (known as **siliceous sinter**) are very often found round the mouths of hot springs.

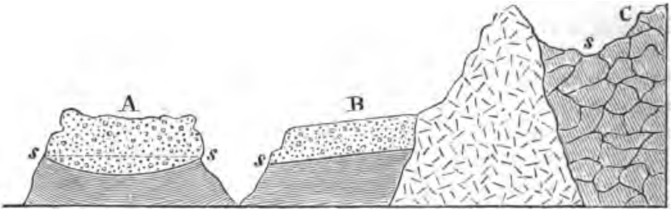

FIG. 8.—A, B, porous rocks ; C, a rock with inter-ramifying fissures ; *s*, *s*, springs.

In many parts of the world springs can be made artificially by deep borings. These are called **Artesian Wells** from having first been made in Europe[3] in the French province of Artois. A peculiar form and structure of ground are required to render the sinking of such wells possible. (1) The ground must be hollow, so that the mouth of the well is lower than the surface where the water destined to feed it is collected. (2) A bed of porous rock must form a similar hollow beneath the surface, emerging at the surface only at certain places where the rain-water can soak into it. (3) Above and below this porous bed must be beds of impermeable rock, the lower bed to keep the water from sinking still deeper and so escaping, the upper to prevent it from oozing to the surface at all parts and so forming a marsh. When these conditions are fulfilled a boring in the hollow down to the porous bed will enable the water to well forth at the top (Fig. 9). Such borings are often of great importance in arid countries.[1]

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[1] See p. 86.

[2] A substance of which quartz and sand are different forms.

[3] Long previously elsewhere.

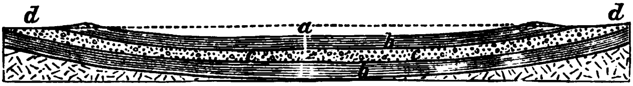

FIG. 9.—*a*, artesian well; *b*, *b*, impermeable strata; *c*, *c*, porous stratum; *d*, *d*, collecting surfaces.

Lakes.—The action of running water is frequently modified by the presence of lakes. Lakes may occur either at the head of a river, when they are fed by a number of small streams, none of which can be identified with that which forms its outlet, by springs, or by rains and trickling water; or they may occur in the course of a river (forming expansions in its bed); or they may be the final recipients of the water of one or more rivers having themselves no outlet; or they may stand quite isolated, fed by rains and springs and kept within limits by evaporation. The last two classes of lakes are nearly always salt, from the gradual accumulation of the salt conveyed by the rivers or other waters that feed them. Lakes with underground outlets (Zirknitz[2]) are only apparent exceptions.[3]

All lakes, whether fresh or salt, tend to be filled up and disappear in course of ages. Where they are, as it were, expansions in the bed of a river, their obliteration goes on rapidly by a double process. At the upper end of the lake the river deposits almost all its sediment in the still water which checks its flow on its entry;[4] at the lower end it constantly saws its outlet deeper, and thus keeps reducing the level of the entire lake. So long, however, as lakes exist, they have an important effect on the lower course of the stream, an effect which often has a great influence on the habitability of the country on its banks. They serve to regulate the volume of the river below, gradually rising in level when floods swell the upper reaches, and thus making the flow of the lower parts of the river more constant, and protecting the neighbouring country from inundation.[5]

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[1] See pp. 269, 311.

[2] See p. 177 *n*. 2.

[3] Lob Nor, in Eastern Turkestan, is a peculiar case. Its waters are fresh, though there is no outlet, but it is described by Przhevalsky as in reality merely the expansion of a river, and as flowing on like a river till its waters evaporate, its salts then forming an incrustation on the surface of the ground.

[4] Lakes are thus filterers of rivers.

[5] The Aar, in Switzerland, has been diverted by an artificial channel into the Lake of Bienne, in order that the lake may serve for this purpose.

In the case of salt lakes the process of obliteration is a more gradual one. The sediment carried into them by the feeders slowly raises the level of the lake, causes it to have a smaller depth but a greater extent of surface. The extension of the surface is, however, retarded by the fact that evaporation is accelerated when the area of the surface is enlarged. But it is only a retardation. The level of the lake tends to rise, the surface to spread, until in the end one of two results is bound to happen. Either the level is so much raised that an outlet is formed to the sea, or the surface becomes so extended that the lake dries up from the rapidity of evaporation. Hence there are large areas of the earth which are constantly dry at least in summer, but have the surface strongly impregnated with salt.[1]

From this account the conclusion may be drawn that all lakes must be regarded as recent formations in the history of the earth, and the hollows which they fill are due to various changes in the crust.

General Result of the Action of Water.—Since, then, it is the destiny of lakes to be filled up and disappear, and of matter at higher levels to be carried down to lower levels, it follows that the ultimate tendency of running water is to carry all the higher land of the earth into the sea. But in doing so it acts unequally—here eating away the land with great energy, there enfeebled or even temporarily checked in its action; and hence the general effect of the process is in the first instance to exaggerate the inequalities on the surface of the earth instead of removing them. Table-lands are thus sculptured into mountains and valleys, and mountain chains and peaks are rendered more and more rugged and precipitous. Many of the mountains of the world are due as such to no other cause.

Marine Deposits.—The sea, being the ultimate receptacle of the matters worn away from the land, sorts them out according to their weight and fineness, and by means of its waves, tides, and currents, spreads them out in vast flat sheets, layers, or strata. The heavier matters sink to the bottom first and form sands, which ultimately get consolidated into sandstones. The finer matters are carried farther out, but sink in the end likewise, forming a muddy bottom which ultimately gets hardened into fine-grained rocks like shale, mudstone, or slate.[2] The soluble substances are carried out farthest of all, and amongst them the carbonate of lime is transported in great quantity into deep waters, there to

> Suffer a sea change
> Into something rich and strange.

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[1] Changes in climate and physical features may modify these processes.

[2] All these rocks may be described as hardened mud; but while mudstones are compact and homogeneous, shales easily split into thin layers parallel to the plane of stratification, and slates can be split into leaves more or less inclined to that plane.

Myriads of living creatures take hold of it, and 'by some strange alchemy' build it up into an infinite variety of beautiful skeletons, which during the life of the animals serve as their means of support and protection, and after their death sink to the bottom and form the material out of which new limestones arise similar to those from which the substance was originally derived.[1]

The insoluble substances derived from the land are never carried far out to sea. Even the largest rivers and strongest currents never transport them farther than 200 or 300 miles from the shore. If the sea-bed keeps stable the shore-line is gradually extended seawards, where deposits are abundant, as at the mouths of rivers and on coasts where currents are arrested. But if the sea-bed happen to be sinking the deposits grow thicker and thicker in the same place, and changes in depth or in the currents may lead to deposits of one kind being laid down immediately above those of another kind. Thus are built up whole series of strata, limestones, sandstones, shales, &c., and from the strata so formed the land is renewed.

Emergence of Marine Deposits.—The changes of level already referred to raise sea-formed strata in many cases high into the air. This has taken place at different times in the world's history, and the strata themselves often furnish an indication of the period when this has taken place, or, if not that, at least of the relative order in which they have themselves been formed. They do so by means of the **fossils** which they enclose. Fossils are remains of living things, whether animals or plants (generally animals), which have been preserved in a recognisable form from the time when they got imbedded in the rocks as these were forming; and an examination of these remains collected in regions where we can tell the order in which strata have been laid down from the order in which they still lie one above the other, has brought to light the fact that in the course of ages there has been a gradual change in the character of the living things on the globe, and hence in the fossils. By the character of the fossils geologists are thus able to tell the relative age of the rocks in which they are found, and

[1] Of the animals which acquire skeletons of carbonate of lime the most important geographically are minute creatures called *coral polyps*, the skeletons of which have formed reefs and barriers in the neighbourhood of coasts in warm seas, and an almost innumerable crowd of small islands in mid-ocean. When wholly composed of coral remains these islands are generally ring-shaped, and are then known as *atolls*. They are necessarily always flat and low, the animals being unable to live out of water. The part of the island above the surface is due to the arrest of drifting matter, by the coral beneath the surface, the heaping of broken fragments of coral on the top of the reefs by the waves, and the subsequent accumulation of vegetable remains—the plant-life itself being either brought originally with drifted material, or derived from seeds dropped by birds. See p. 317, and cut, p. 318.

hence we may speak of rocks being in a geological sense older and newer.[1]

Folding of Strata.—Though originally, as a rule, spread out level at the sea-bottom, the strata are scarcely ever found to be level, or nearly level, when raised to form dry land. They are folded and crumpled as layers of cloth might be when squeezed from side to side while at the same time under pressure from above. There can be no doubt that the rocks forming the crust of the earth have been subjected to a similar squeezing, a squeezing of such tremendous force as to bend immense thicknesses of the hardest rocks into greater or smaller wrinkles, sometimes forming gentle undulations, sometimes close-set folds.[2]

Mountain-building.—Along certain lines the crust of the earth seems to have been peculiarly weak, so as to be less able than other parts to resist the enormous upward pressure resulting from this lateral squeezing. In such situations great masses of matter have been forced high into the air, forming mountain chains like the Alps, Himalayas, and Andes. The formation of deep seas like the Mediterranean seems to have been part of the same process, a great hollow corresponding to a great swelling. The greatness of the force exercised during this process is evidenced by the abruptness of the folds of the strata, which often in mountainous regions stand upright, and sometimes are tilted over so that older rocks come to lie above newer.

But, tremendous as the forces are which give rise to upheavals of this kind, the process is generally an extremely slow one, a striking proof of which is furnished by the fact already mentioned,[3] that rivers often cut right across mountain chains, for there is often the clearest evidence to show that the rivers were there before the mountains, and have deepened their beds as the mountains rose, forming themselves the gorges by which the chains are broken.

Earthquakes.—There is strong reason to believe that earthquakes also are, in many cases, among the consequences of the enormous lateral pressure which crumples the strata of the earth's crust and builds up mountain chains. We can imagine that the snapping of a part of the crust deep below the surface in consequence of the intense strain which that pressure causes is the origin of the shock which sometimes destroys whole cities along with thousands of human beings.

Many earthquakes are, however, due to volcanic outbursts, and still more, in all probability, to subterranean movements of the same nature as those which lead to such outbursts. The localities in which earthquakes most frequently occur are such as might be expected in accordance with these two surmises as to their cause; for these are, in the first place, regions where active volcanoes are most abundant (see next paragraphs); and, secondly, mountainous countries, and above all the neighbourhood of mountain chains. Besides the shores of the Pacific Ocean and the islands of the Eastern Archipelago, the parts of the world most frequently visited by earthquakes are the Mediterranean Peninsulas (including Asia Minor), the Caucasus, Elbruz, Himalayas, Tian-Shan, and Appalachian Mountains and the districts in their vicinity.

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[1] Vegetable remains, found chiefly among a particular series of older rocks, forming the Carboniferous system, have given rise through chemical and other changes to *coal*.

[2] See Fig. 24, p. 160.

[3] See p. 26.

Minor shocks may be due to various other causes, and careful observations with instruments in different parts of the world have made it likely that the whole surface of the earth is in a constant state of **tremor.**

Volcanoes.—All mountains are not due to the processes already described, nor are all parts of the earth's crust composed of rocks originally laid down in water. Volcanoes are built up of material ejected from beneath the surface of the earth, and their generally conical form is due to the mode in which that matter has been deposited round the opening from which it is ejected (the **crater**).[1] The matter thrown out is sometimes molten (**lava**), and pours forth in a glowing stream, which may flow to a distance of scores of miles. Sometimes the molten matter is sent forth with such violence as to be torn into spray, which solidifies in the air into dust, mingled with larger and smaller rounded[2] stones (**bombs** and **lapilli**). Sometimes the matter ejected is solid, even when blown from the crater, but there is always gas along with the vapour of water present, and occasionally there is nothing else. In former geological ages wide sheets of molten lava appear to have issued in certain places from cracks in the earth's crust, and to have covered extensive plains. Solidified matter (previously molten) filling a fissure in the crust is known as a **dyke.**

Many volcanoes are **extinct**, and have not undergone eruption in historical times, and some such volcanoes are remarkable for still preserving their characteristic form with well-marked craters (Auvergne, Eifel). Others are **dormant**, not having undergone eruption since a remote period. Others are said to be **active**, being still subject to eruption from time to time.[3] Almost all active volcanoes are situated near the sea, and this fact would appear to have a great deal to do with the occurrence of volcanic outbursts. It is believed that such outbursts may be due in some, if not in all cases, to the sudden conversion into steam of water that has filtered through porous rocks to heated matter deep down in the crust of the earth.

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[1] Greek, 'a cup.' Usually there are many secondary craters in a volcano in addition to the principal one. [2] The rounded form due to whirling in the air.

[3] The number of active volcanoes distributed over the globe is upwards of 300, but it is impossible to state the precise number, since it cannot always be determined whether a volcano is to be considered active or dormant, or even extinct. Those which are undoubtedly active are mainly scattered round the Pacific, on the west coast of America (with a wide gap in temperate North America) in the

Underground Heat.—In any case the existence of volcanoes is a proof of the presence of heated matter below the earth's surface. But it is not the only proof. Everywhere it is found that when we descend below a certain depth[1] at which the temperature is constant all the year round, the temperature increases the deeper we go. The rate varies at different places and even for the same place, at different depths, but on an average is estimated at about 1° Fahr. for every forty-five feet of descent. Hot springs are one of the effects of this internal heat of the earth. **Geysers**, or hot springs liable to periodic eruptions, during which water is sometimes shot hundreds of feet into the air, occur in Iceland, Western North America, and New Zealand. Their eruptions are probably due to the gradual increase of heat at the bottom of a

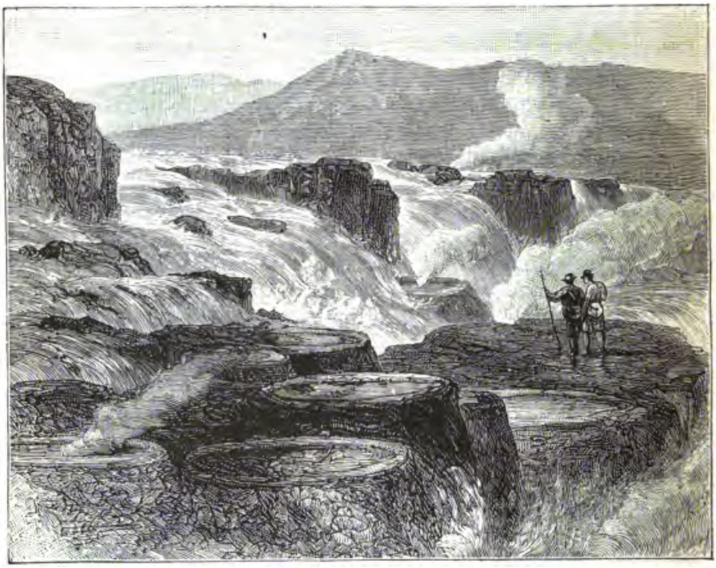

FIG. 10.—BOILING SPRINGS, UNITED STATES (see page 293).

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north-east of Asia, and on the islands in the east and south-east of Asia. Many islands in mid-ocean are entirely volcanic in their origin, and many volcanoes are submarine.

[1] Varying in different places according to climate.

deep column of water till the temperature exceeds the boiling-point at the pressure exerted by the column.[1]

Effect of Surface Inequalities on the Habitability of the Earth.—Mountains and plateaux act in some respects favourably, in others unfavourably, in the development of population.

(1) Long mountain chains interrupt communication between the people on different sides more or less, and the interruption is the more serious the denser the populations that are thus separated. From this point of view the height, slope, and number of passes across mountains are of much more importance than the height and number of the peaks. (2) Mountain slopes are difficult of cultivation, and more difficult in proportion to the steepness. Cattle-rearing is almost the only agricultural industry that can be carried on high up on mountain sides. (3) On the other hand, in regions that require irrigation the lower slopes of hills and mountains present one peculiar advantage for agriculture, inasmuch as they can be cut out into level terraces, to which the fertilising water can be led down from stage to stage. In warm countries this is a very common mode of cultivation. (4) Mountains and plateaux have various important effects on climate, which will afterwards be explained.[2] (5) Mountains and highlands generally, in virtue of the

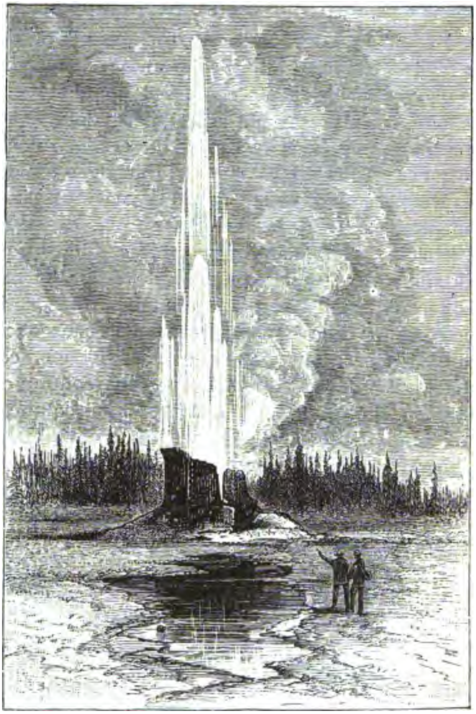

FIG. 11.—THE GIANT GEYSER, UNITED STATES.

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[1] The boiling-point is higher the greater the pressure.

[2] See pp. 52, 194, &c.

processes already described, are the sources of soil for the plains lying at their feet; hence the fertility of the valleys of the Po, Ganges, and many others. (6) Through the contortions to which mountains owe their rise a great variety of strata, old and new, are brought to the surface, and with these a great variety of minerals,[1] the working of which employs a large population.

The Atmosphere.

The atmosphere is a mixture of gases[2] forming an envelope round the globe. Its height above the surface cannot be definitely stated, for the gases of which it is composed gradually become rarer and rarer the greater the elevation. The greater density of the lower strata is a consequence of the attraction of the earth, which gives weight to every substance on the earth's surface, though in the case of the atmosphere this weight cannot be felt by us, because it presses equally on all sides. The pressure on one side of the hand exactly balances that on the other side. The weight or pressure can, however, be made observable in various ways. The commonest way is by means of a tube closed at one end, exhausted of air and inverted over a basin of mercury. The mercury then ascends the tube, in consequence of the pressure of the atmosphere outside, unbalanced by any corresponding pressure inside. It rises till the weight of the column of mercury is exactly equal to the weight or pressure of a column of air of the same diameter. A tube like this, with a scale marked on it to show the height to which the mercury rises, is called a **barometer**. The average height at sea-level is nearly thirty inches.

The differences in the height to which the mercury rises in a barometer at different levels above the surface of the earth are sometimes taken advantage of to measure the elevation of mountains and plateaux; but such measurements are not very trustworthy because the height of the barometer, or in other words, the pressure of the atmosphere, varies at different times at the same place, as it varies at different places at the same level.

Winds.—Of the latter differences, which are of the highest importance in geography as giving rise to winds, the great cause is the heat of the sun. Heat expands or rarefies the air, and hence causes the pressure to be less, while cold condenses the air and increases the pressure. But as water always tends to assume the same level, air always tends to acquire the same pressure at the same level. This it does by flowing from the place where the pressure is high to where it is low, and hence from where it is condensed to where it is rarefied. The most familiar illustration of this is presented by **land** and **sea breezes.**

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[1] See p. 194

[2] The principal being nitrogen and oxygen.

These are due to the fact that the land is more rapidly heated by day, more quickly cooled by night, than the sea.[1] Hence by day it is warmer on land than at sea, and, if the weather is otherwise calm, a sea-breeze blows on the coast by day. For the opposite reason, a land breeze blows at night.

Under the same law there blow over a great part of the ocean constant winds which, directly and indirectly, are of the highest importance for the climate of the whole earth. These are called the **trade-winds**, which are winds blowing more or less from the north and south towards a belt near the equator, where the amount of heat and consequent rarefaction is greatest, and where calms and variable winds prevail. The position of the dividing belt between these two winds varies from season to season through about 8° in the Atlantic, 5° in the Pacific Ocean, being farther north when the sun is high north of the equator, farther south when it is high south of the equator. In the Atlantic and Pacific Oceans they blow on each side of the dividing belt over a breadth varying from 20° to 25°. In the Indian Ocean only the south trade-wind prevails.

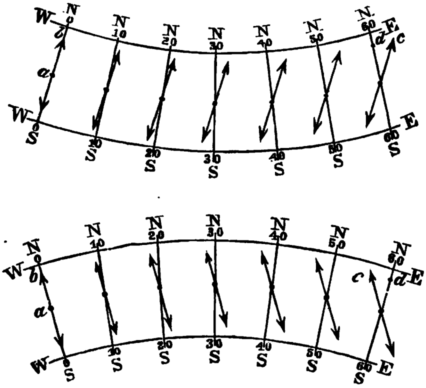

FIG. 12.

If the direction of these winds depended solely on the difference of temperature in tropical and extra-tropical seas it would be exactly north to south in the northern hemisphere, south to north in the southern, but there are three causes which alter, or seem to alter, their direction. Two of these are direct consequences of the rotation of the earth.

The first and most important of these effects is illustrated by

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[1] See p. 43, under *Temperature.*

Fig. 12, in which the arrows represent the vibrations of a pendulum continued uniformly in the same direction while the earth is turning on its axis, the upper part of the figure showing how the motion of the pendulum, which began as a due north and south vibration in long. 0° comes to cross the direction of the meridian in the northern hemisphere, as the rotation of the earth brings the position at which the motion commenced into those positions which were then occupied by the meridians 10°, 20°, &c.; the lower part of the figure shows similar effects in the southern hemisphere. By causing a pendulum to vibrate in this manner a French physicist named Foucault made the effect of the rotation of the earth visible. So also if the direction of motion of a current of air at starting in lat. 30° S. is due north, then in long. 0° (Fig. 12, lower part of fig.) it is represented by the arrow pointing northwards upon that meridian; but if, while keeping the same direction, the current of air reaches lat. 10° S., when the earth has rotated from 0° to 60°, the original direction will be represented by the arrow pointing to *c*; the point moving from *a* to *b* will arrive at *c* instead of *d*; the wind will have become more or less south-east. Thus all winds of the northern hemisphere tend to appear as if deflected to the right, those on the southern hemisphere for similar reasons to the left. Secondly, the movement of rotation along parallel 30° is slower than along parallel 10°; hence the air coming from 30° tends to lag behind at 10°, and so become more easterly. Thirdly, in the case of the Atlantic trade-winds, the greater rarefaction on the land tends to suck in the air from the opposite region of the ocean, and this increases still further the easterly element of the direction of the trade-winds in the neighbourhood of South America.

The winds which constantly pour in from the outer margin of the trade-wind belts must necessarily be balanced by others flowing outwards. Near the dividing belt this outward flow, constituting the **anti-trades**, takes place at an elevation too great for us to have any direct evidence of it, but the signs of it become more and more frequent the farther we advance towards the outer margin of the trade-winds. Within twelve or fifteen degrees of the equator occasional evidence of it is furnished by volcanic dust being projected up to the height at which this outward wind is blowing, and hence falling to the east instead of the west of the volcano. Nearer the margin high clouds can sometimes be seen moving eastwards; and on mountains, such as Teneriffe, in lat. 28° N., there is a constant south-west wind, which blows, however, only at the top in the height of summer, descending lower and lower as the winter advances and the margin of the trade-wind belt recedes to the south.

This shows that the anti-trades sink in elevation as they recede from the place of their origin. The air which they carry cannot all advance farther and farther polewards, for it is obvious that, as the intervals between the degrees of longitude grow narrower in that direction, there cannot be room round the poles for the air that starts from the equatorial belt. A struggle hence takes place among the particles of air, and this leads to a condensation of the air about the margin of the trade-wind zone, where the barometer generally indicates a higher pressure than almost anywhere else on the globe. Thence accordingly the wind flows at the surface of the earth equator-wards and polewards, with the normal apparent deflection. Hence south-west winds (anti-trades) prevail throughout the year on the west coasts of Europe and the corresponding coasts of North America; but in the northern hemisphere, owing to the frequent interchange of sea and land, the winds of the temperate zone are extremely variable. In the southern hemisphere, on the other hand, there is little land beyond 40° S., and hence the anti-trades blow there with more constancy, and are known to seamen, from the latitudes in which they prevail, as 'the Roaring Forties.'

A certain constancy can be observed even in the variable winds of the northern hemisphere. Normally they either blow from all sides inwards to a centre of low air pressure, or outwards on all sides from a centre of high pressure, In the former case they form what is called **a cyclone**,[1] because the isobars or lines connecting the places having an equal pressure outside the centre of such a wind-system are circular or nearly circular in shape. In the latter case they constitute a wind-system known as an **anti-cyclone**. The direction in which winds blow spirally[2] inwards in a cyclone is (in the northern hemisphere) opposite to that of the movements of the hands of a watch lying face upwards, in an anti-cyclone the opposite. The position of an anti-cyclone is usually pretty constant for days, or even weeks together, but that of a cyclone is constantly changing, as the centre of low pressure is always shifting, generally in a more or less easterly direction. Cyclones vary greatly in dimensions, but most commonly they are between 1000 and 2000 miles in diameter, so that one that extended only from the Shetland Islands to the middle of France would be a small one. In low latitudes cyclones are much rarer than nearer the poles, but when they do occur are generally smaller in size and more violent in character. They constitute in fact the revolving storms known in different regions as **hurricanes** and **typhoons**, as well as cyclones. In the seas where they occur these are most prevalent at certain seasons of the year. The hurricanes of the West Indies and the North

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[1] From Gr. *kyklos*, a circle.

[2] Not directly, because they are deflected as explained on p. 40.

American coast, and the typhoons of the China Sea and the coasts of Japan, occur chiefly from July to October, and above all in August and September; the cyclones of the Malabar coast and the Bay of Bengal, chiefly in April and May, October and November; those of the South Indian Ocean, and in the South Pacific Ocean between the Australian coast and the Low Archipelago, chiefly from December to March or April. In both hemispheres accordingly they take place mostly in the summer months, except in the Indian seas, where they are most prevalent about the change of the monsoons (see next paragraph). In the southern hemisphere the direction of rotation in a cyclonic storm is opposite to that experienced in the northern hemisphere.

In many parts of the world, sea and land breezes take place on a large scale, alternating not by day and night, but from season to season. The region in which such alternating winds prevail most extensively and in the most marked degree is South-Eastern Asia, including the Eastern Archipelago and the northern part of Australia, throughout which the winds are known as **monsoons**, from the Arabic word for seasons. The contrast between the different seasons is most marked in the area to the south of about lat. 25° N. (India, Indo-China, and Southern China, as well as Northern Australia and the Islands), where sea breezes (south-westerly, southerly, south-easterly) blow more or less steadily for half the year, while the sun is in the northern hemisphere, and the rarefaction greatest over the land, and land breezes during the rest of the year. Even as high as lat. 60° N. the seasonal changes are indicated by the predominance of sea and land breezes, in summer and winter respectively. South of the equator the monsoon winds are governed chiefly by the rarefaction and condensation in the interior of Australia. Hence the sea breeze (in the Eastern Archipelago and the greater part of Northern Australia a north-west wind, in the north-east of Australia a north-east wind) occurs in our winter months (the Australian summer).

Seasonal winds of the same nature, though less constant, are observed in other parts of the world, as to the north-east of the Gulf of Mexico and of the Black Sea.[1]

The Ocean.

The ocean is a vast body of salt water, the volume of which relatively to the land surface of the earth has already been indicated. The saltness varies from thirty-three to thirty-eight parts in a thousand, being greatest in the trade-wind area and in inland seas like the Mediterranean and the Red Sea, where evaporation is rapid and the influx of fresh water slight. In other inland seas, where opposite conditions prevail, the saltness is much less than that of the ocean. In some parts of the Baltic it is only about seven parts in a thousand.

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[1] See pp. 226, 275, 292.

Temperature.—The temperature of the ocean generally, as compared with that of the land, is remarkable for its uniformity. At the surface the mean daily range, or difference between the highest and lowest temperature within a single day of twenty-four hours, is not more than 1° F. in deep seas, 4° F. in shallow waters. The annual range exhibits a corresponding equability, although, of course, the extremes in this case are wider apart. There are two causes of this very important geographical fact. (1) Water requires a greater amount of heat to raise its temperature one degree than any other substance, a much greater amount than is required by the solid substances composing the land surface of the earth. (2) The movements which go on unceasingly in the waters of the ocean, and of which some account will be given presently, have the effect of distributing and equalising the temperature. Another consequence of the slowness with which water is heated (and the like slowness with which it is cooled) is that the hottest and coldest months for the ocean (August and February) occur a month later than the corresponding months of the land surface of the earth, except in those maritime places where the temperature is governed in a marked degree by marine influences.

Movements of the Ocean: Waves.—The movements of the ocean are all of great importance with relation to the inhabitants of the earth. The most obvious of these consists in wind waves—sometimes only a gentle rocking and lapping, at other times terrible in their violence. Great difficulty exists in measuring the height of waves. The highest storm waves are said to measure forty-four to forty-eight feet in height, the average storm wave about thirty feet. The distance from crest to crest in the case of great waves is said to vary from 500 feet to half a mile in extreme cases. With regard to the force of the waves, it is recorded that at the Skerryvore Lighthouse, off the west coast of Scotland, a mass of rock five and a half tons in weight has been hurled by a wave to a height of seventy-two feet above the surface of the sea, and a mass thirteen and a half tons in weight dislodged from a cliff at a height of seventy-four feet. Such instances convey a good idea of the power of the waves in wearing away an exposed coast.

Tides.—The tides, which consist in a gradual rise and fall in the level of the ocean completed twice in about twenty-five hours, are practically important in relation to navigation, and more particularly in relation to the navigation of narrow seas and river mouths. In narrow channels the tides are not merely a rise and fall of the level, but also a backward and forward flow or current, and as such assist in propelling craft now up and now down a river; and, moreover, have in some cases an important effect in preventing the formation of river bars, since they scour the lower part of the river bed and wash the sediment far out to sea, or cause it to be deposited chiefly on the river banks and not in mid-channel. But as a rise and fall also the tides are of great consequence in relation to shipping, as enabling vessels of large burden to ascend the estuaries[1] of rivers to a considerable distance, so as to facilitate the growth of great seaports in perfectly sheltered positions easily accessible on the land side as well as by sea. Great Britain and the shores of the North Sea are peculiarly favoured in respect of tidal influences, the tide rising in these waters to an exceptional height, as will be understood when the rise and fall of the tide is explained.

The tides are due to the attraction of the sun and moon on the earth, but chiefly that of the moon. If it were the whole amount of attraction exercised by the sun or moon on the earth that gave rise to the tides, then the influence of the former would be by far the greater; but it is not the whole amount of the attraction in either case that has the effect in question, but the difference between the attraction of either upon the solid (or at least rigid) globe and that exercised on the movable body of waters on its surface. The waters swell up in a great wave on the side nearest the moon, because they are pulled more strongly towards the moon than the solid globe is. Those on the opposite side get heaped up likewise, because the solid globe is, as it were, pulled away from them. Two great waves are thus caused simultaneously by the action of the moon, and the course of the tides (the period and height of their rise and fall) depends chiefly on the phases of the moon. The influence of the sun is principally manifested in increasing the height of the tidal waves at new moon (when the sun and moon are on the same side of the earth and reinforce each other by pulling in the same direction), and at full moon (when they are on opposite sides and reinforce each other in another way, the sun's near wave being increased by the moon's distant one, the sun's distant wave by the near wave of the moon). The high tides occurring at these times are known as **Spring Tides**, which therefore occur at intervals of a fortnight, and the very low tides which occur at half moon (also accordingly at intervals of a fortnight) are called **Neap Tides**.

In mid-ocean the height of the great tidal wave is much less than on the coast, and especially where the sea becomes gradually shallower as the coast is approached. In mid-Pacific it is only about three feet, in mid-Atlantic about twelve feet. The effect of a shallowing coast is to retard the progress of the wave, so that the advancing waters overtake those in front and cause them to be heaped up. The shallow bank on which the British Isles lie[1] thus serves to increase the height of the Atlantic wave, and this effect is enhanced in certain funnel-shaped estuaries or gulfs, where the wave is more and more retarded as it advances.[2] In the Bristol Channel, which has the highest tides in the British Isles, or indeed in Europe, there is sometimes a difference of more than forty feet between high and low water at spring tides; in Cumberland Basin, at the head of Fundy Bay, between New Brunswick and Nova Scotia (where are the highest tides in the world), the extreme difference is as much as seventy feet. In the case of the Bristol Channel the effect is partly due to the fact that two tidal waves unite to advance up the Channel at once. The wave from the Atlantic breaks into branches on the south coast of the British Isles. One branch passes round the North of Ireland, and at the mouth of the Bristol Channel meets and combines with a second branch belonging to the next tidal wave, about twelve and a half hours later.

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[1] The term *estuary* from Lat. *aestus*, the tide, is properly applied to the wide mouths of rivers exposed to tidal action.

Inland seas like the Mediterranean or the Baltic have scarcely any tide. Their narrow mouths prevent them from sharing in the tides of the ocean, and the volume of water in them is too small for them to have considerable tides of their own. There are few points in the Mediterranean where the tides reach three feet in height, few in the Baltic with tides of even one foot. The smallest body of water in the world in which tides have been ascertained to exist is Lake Michigan, where the highest rise at Chicago even in spring tides is only about three inches.

Currents.—With reference to the habitability of the earth, by far the most important movements of the ocean are its currents, chiefly owing to their effect on climate. The currents principally concerned in these effects are surface currents; but a consideration of these requires us to pay attention to another great movement of the waters of the ocean. The movement referred to is the gradual in-creeping of a vast body of cold water from the polar regions towards the equator, a movement whose existence, long surmised on the ground of observations of deep-sea temperature, has been clearly proved by the numerous additional observations that have been taken in recent years. These observations have shown (1) that all the deeper parts of the ocean in free communication with the surrounding waters (from about 1,600 fathoms downwards) are occupied by a layer of ice-cold or nearly ice-cold water (31½°-35° Fahr.); (2) that inland seas (like the Mediterranean) and isolated depression basins cut off from the surrounding waters by a submarine ridge have bottom temperatures either corresponding to the mean winter surface temperature of the place, or the same temperature as that of the water at the level of the ridge; (3) that submarine banks or islands cause the cold waters to rise nearer the surface (they being, as it were, forced up by the obstruction); and (4) that the colder waters rise nearer the surface about the equator than they do even at a distance of from 30° to 35° on either side.

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[1] See p. 65.

[2] It must be carefully noted that the advance of the tidal wave is different from the upward flow in a tidal river. The advance of the wave is indicated by the period of high water—that is, the time at which the crest of the tidal wave reaches a particular place; but the river continues to flow upwards for a considerable time after high water, as it continues to flow downwards for some time after low water.

All these facts are explicable only on the supposition above stated, and we may hence assume that there is a slow but steady inflow of cold water from the polar regions to the neighbourhood of the equator, where the meeting streams rise towards the surface. The surface currents, on the other hand, mainly result in a transference of water from the equatorial regions towards the poles.

In the case of the chief **surface currents** there is little doubt that the prime movers are the winds; and hence in the domain of the most constant winds of the globe—the trade-winds—there are in both the great oceans two westerly[1] surface currents known as the **North and South Equatorial Currents**, in the Indian Ocean only the latter of the two. By means of these currents the waters are driven up against the eastern shores of the opposite continents or the islands lying off them, and are hence compelled to take another direction. Part of the water consequently returns eastwards, forming what is known as the Equatorial Counter-current, which in the two great oceans is between the north and south equatorial currents, in the Indian to the north of the only direct trade-wind current. Part of the water passes, however, obliquely to the north and south along the eastern shores of the continent. Now here we may note an important consequence of the disposition of land and water. In the Atlantic the eastern shoulder of South America lies to the south of the equator and under the influence of the south equatorial current, so that a considerable portion of its waters is deflected northwards along with other waters derived from the north current, and, owing to the contraction of the Atlantic towards the north, the benefit of this gain of warm water is confined within a limited area, within which it is all the more appreciable. The benefit, too, is almost confined to the eastern shores of the North Atlantic basin, which are consequently more favoured than any other part of the world in the same latitude.

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[1] Currents are named (unlike winds) from the direction in which they flow.

To understand this we must trace the subsequent course of these equatorial waters. In consequence of what has already been pointed out a large body of water enters the Mexican Gulf, and after sweeping round its shores quits it at the strait between Cuba and Florida as a swift,[1] narrow,[2] warm,[3] current of deep blue[4] water, called the **Gulf Stream**, which thence proceeds north-eastwards, shallowing, spreading out, and finally breaking up into branches (a marine delta) as it advances. As a distinct current it comes to an end between long. 30° and 40° W., but a great deal of its waters is swept north-eastwards to the shores of Europe and Iceland (**Gulf Stream Drift**) under the influence of the prevailing south-westerly winds; a portion, however, returning southwards along the coast of Portugal and North-West Africa.[5]

The south-west branch from the south equatorial current of the Atlantic is much feebler, and there are no currents elsewhere which have anything like the same effect as the Gulf Stream in high latitudes. In the Pacific the current which answers to the Gulf Stream, known by the Japanese name of **Kuro Siwo**, or Dark[6] Stream, is the most important, but is colder than the Gulf Stream. In this ocean also the configuration of the continent is favourable to the transference of a considerable body of warm water by drift currents to the north-east shores of the basin (north-west coast of America), but the benefit derived therefrom is less than on the corresponding shores of Europe for the reasons already indicated. Like the Gulf Stream, the Kuro Siwo gives off a return branch that proceeds southwards, this branch bringing relatively colder water which skirts the coasts of California.

Though the principal surface currents are equatorial in their origin, **cold surface currents** are by no means wanting, and, as regards the action of these also, the northern hemisphere is greatly favoured as compared with the southern through the disposition of land and water. The only important surface current from the Arctic seas proceeds from Davis's Strait along the east coast of North America. It is known as the **Labrador current**, and advances southwards between the Gulf Stream and the coast of the United States, where it is known as the **Cold Wall**, on account of the sharp distinction in temperature between its bright green waters and the blue waters of the Gulf Stream. The shallow Behring's Strait does not admit any cold current to the Pacific Ocean; but, on the other hand, no less than three cold surface currents take their origin in the Sea of Okhotsk, in the north-east of Asia—one skirting the west coast of Kamtchatka and passing southwards by the Kurile Islands, and one on each side of the island of Sakhalin.

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[1] About four miles an hour.

[2] About thirty miles wide.

[3] Above 80° Fahr.

[4] The depth of colour due to the high degree of saltness, and that again to the great amount of evaporation from the warm water.

[5] Within the area round which the currents belonging to this system flow lies what is known as the *Sargasso Sea*, where the surface of the ocean is thickly strewn with a floating seaweed.

[6] That is, *dark blue*. See Note 4.

But in the more open seas of the south the cold currents are very important. Everywhere beyond 45° S. the waters of the Southern Ocean appear to be drifting north-eastwards, and on the western coast of all the great land-masses of the south (South America, Africa, Australia) this drift is continued in the form of a cold current proceeding northwards for a longer or shorter distance. The most important of these is the **Humboldt** or **Peruvian current**, which advances along the west coast of South America as high as 4° S., and maintains a temperature several degrees below that of the corresponding parts of the open ocean.

Local currents are often produced at the mouths of inland seas from different causes. Through the excess of evaporation over rainfall and over the influx of rivers in the Mediterranean and the Red Sea, there are inflow currents at the Straits of Gibraltar and Bab-el-Mandeb to make good the loss of water which thus ensues; and for the opposite reason there are outflow currents at the mouth of the Baltic (Kattegat) and Black Sea (Bosporus). In each case, however, there is a deeper current in the opposite direction, no doubt due to the differences in saltness between the communicating seas. There are numerous other local currents which it is not always easy to explain, but which often have important effects through the sediment which they carry extending the coast-line seawards and silting up harbours.[1] Coasts directly exposed to currents carrying much sediment are generally flat and bordered by shallow seas, often lined with sand-dunes, and hence not easily accessible to shipping; while rocky coasts, on the other hand, are generally bordered by deep seas and have numerous creeks and natural havens.

Marine Life.—In the sea, as on land, the greatest variety of animal and vegetable life is found within the tropics, species becoming less numerous towards the poles. In the sea, animal life is everywhere much more abundant and varied than vegetable, and it extends to a much greater depth. Even the lower forms of Algæ (the group to which most sea-plants belong) do not extend below 250 fathoms, while animals have been dredged up even from a depth of 3,000 fathoms. Among the forms derived from these dark deeps a large number are phosphorescent—emit a light of their own. The effect of the uniform deep-sea temperatures on the life of the waters is worthy of note, inas-

[1] See pp. 83, 134–5.

much as it enables some species of whales, for example, to live in all parts of the ocean.

The oceanic circulation is of importance to ocean life in several respects. In the first place it is chiefly by means of the vertical circulation—that is, the sinking of cold polar waters from the surface to the bottom (to rise again at the equator)—that oxygen, which is as necessary to life in the ocean as on the land, is carried down to great depths; and the comparative dearth of life in the Mediterranean, for instance, is explained as a consequence of the submarine ridge at its mouth shutting out the bottom waters of the Atlantic and so limiting the supply of oxygen. Secondly, almost all the fishes extensively used for food (cod, herring, &c.) inhabit cold water, and are brought in immense profusion by cold currents to lower latitudes than they would otherwise reach, as to the shores of Newfoundland in North America, Yezo and Korea in the east of Asia, Table Bay in the south-west of Africa.

Climate.

Under this head three subjects are considered: **temperature, rainfall, and salubrity.** On the distribution of **temperature and rainfall** over the surface of the earth much light is thrown by facts that have been mentioned already. Near the beginning of this Introduction it was explained why temperature is on the whole higher within the tropics than elsewhere. There also temperature is on the whole most equable throughout the year, because in that zone the variations in the height of the sun are less, especially in very low latitudes.[1]

The torrid zone is also on the whole the region of the greatest rainfall, which is a natural consequence of the nature and origin of rain. The source of rain is vapour or invisible moisture in the air, and the vapour is due to **evaporation**, or the conversion into an invisible form of water (snow or ice), a process always going on over the surface of the globe, and especially over the ocean. Though the process goes on even at freezing temperatures, evaporation is hastened by heat, and is always greatest where heat is greatest, and hence most rapid in tropical seas. To condense or render visible this vapour, cold is necessary; but even in the torrid zone that cold is found in the higher regions of the atmosphere, to which the moisture is drawn up by ascending currents of warm air. The vapour is first condensed into clouds, which consist of minute drops of water (hence elevated mists), or, when very high, of particles of ice. The necessity for a certain amount of cold to produce condensation is an important fact to bear in mind in considering the distribution of rainfall. The greater the cold the less the amount of moisture that can remain as vapour in the atmosphere. Hence it is that all parts of the earth where the rainfall is very deficient are such as have, at least, very warm summers, for where the atmosphere is very cold even a small amount of moisture will be condensed. Hence, too, on the other hand, even in the torrid zone, the trade-wind region has very little rain, for, great as the evaporation is, the winds are always carrying the moisture onwards to latitudes where still more vapour can be retained without condensation. The belt of calms and variable winds between the trade-wind belts is that in which the most regular tropical rains occur. In it heavy rains take place daily, but, as generally happens in tropical climates, the rain falls in deluges[1] when it does fall, but not for long together.

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[1] Except on the borders of the torrid zone the sun is to be seen at midday sometimes to the north, sometimes to the south, of every place within that zone, and the variations in the height of the sun are consequently less than where for half the year its position at midday is always becoming further north, for the other half of the year further south, as it does everywhere outside of the torrid zone.

Such are the most general facts regarding the distribution of rainfall and temperature over the globe; but the circumstances that modify that distribution are of even greater interest, if not of greater importance. And with regard to the modifying circumstances there is one general fact to be borne in mind, that **it is the winds which are the direct carriers both of temperature and moisture from one part of the earth to another.** The modifying circumstances accordingly are those which affect the amount of heat and moisture which the winds carry. Of these there are three of sufficient consequence to be taken into account even in the briefest outline of the present subject. These are (1) the general relations of sea and land; (2) ocean currents; and (3) superficial configuration.

(1) **Effects of the Relations of Sea and Land.**—(*a*) **As regards temperature,** the sea being more slowly heated and cooled than the land,[2] regions under the influence of sea breezes have a more equable temperature than those in the interior of continents removed from such influences. This is shown in the most instructive manner on charts indicating the average or mean temperature of different parts of the globe by means of **isothermal lines**—that is, lines connecting places having the same mean temperature for particular periods (as the whole year, the winter or summer months, the months of January and July &c.) A comparison of the isothermal lines for January and July in the north temperate zone is what brings the fact now dwelt on most prominently into view, showing at a glance that the former isothermals (those for the coldest month) rise, while those for the hottest month sink on both sides towards the sea. In other words, they show that when

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[1] Mostly in the afternoon and evening, when the power of the sun has declined.

[2] See above, p. 43.

we proceed inland from either coast on the same parallel of latitude we come to places that have greater cold in the depth of winter, greater heat in the height of summer, than those from which we started.

(*b*) **As regards rainfall,** regions exposed to winds from warm seas have an abundant rainfall. Hence it is that, except where mountains intervene, all parts of the earth in which monsoon winds prevail have abundant rains during the summer of the respective regions (in opposite seasons accordingly in the northern and southern hemispheres), and that the rains are most plentiful where they come from tropical seas (India, Indo-China, Eastern Archipelago, north of Australia).

(2) **Effects of Marine Currents.**—These are most marked where the temperature of the current is considerably different from the average temperature of the latitude. Hence **the warm currents which have the most noteworthy effect in this respect are the Gulf Stream Drift and Kuro Siwo Drift,** and more especially the former. The effect of these currents is, on the one hand, to equalise the temperature of the west coasts of Europe and North America in a much more marked degree than is done by the mere proximity of the sea, and, on the other hand, to supply the same coasts with plenteous rains, which fall all the year round, but chiefly during the autumn and winter months. The equalising of the temperature is chiefly the result of the raising of the temperature of winter by the prevailing south-west winds, which have their temperature maintained by the warm currents over which they blow. But it must also be remembered that the summer is cooled not only in consequence of the sea being everywhere in that season colder than the land, but also through the prevalence of clouds which keep off the heat of the sun. The abundance of rain is due to the relatively great amount of evaporation over the warm seas, and its greater abundance in autumn and winter to the fact that there is then the greatest difference between the temperature of sea and land.

A moist, mild, and equable climate is thus the characteristic of the regions under the influence of the currents above named, and in the latitudes to which they belong the extremes of temperature increase and the rainfall on the whole diminishes as we go eastwards, until we approach the eastern shores, where again an equalising effect is observable to a comparatively slight extent. The easterly increase in the cold of winter is especially marked, and the part of the habitable land surface of the globe where the greatest cold is experienced lies near the north-east of the broader of the two great land masses of the northern hemisphere.

The cold current which has the most marked effect on climate is the Humboldt or Peruvian current, which advances so far within the tropic of Capricorn on the west coast of South America.[1] Similar but less marked effects are noticed in the west of Africa and Australia, where corresponding currents are found.

(3) **The effect of superficial configuration on climate** is shown in various ways. (*a*) In the first place, mountains often act as barriers to winds, and cut off the regions behind them from the temperature and moisture which they carry.[2] In the case of rainfall the effect of a mountain barrier is even more marked than in the case of temperature, because mountains (or the edge of a plateau), in compelling rain-bearing winds which strike against them to ascend to higher and colder regions of the atmosphere, cause most of their moisture to be condensed on the side exposed to the wind. The highest rainfalls are, therefore, always met with in elevated regions, and mountains, even when far in the interior of a continent, often have their position pretty well determined on a rainfall map through the indication of a higher rainfall where they are situated. Especially is this the case when their general direction is at right angles to the prevailing rain-bearing winds.

(*b*) The effect of elevation in lowering temperature has already been alluded to incidentally more than once, and is a fact familiar to almost every one. The effect is due to several causes. (1) Air is heated with greater quickness in proportion to its density. The rarity of the air at great elevations is therefore unfavourable to its temperature. The effect of the sun's rays on the ground or any object on which they shine directly is not diminished by the elevation. At the height of 10,000 feet in the Himalayas, Hooker on one occasion observed the temperature to rise to 132° Fahr. when shaded snow close by was at a temperature of 22°. (2) Air at any elevation receives very little heat from the direct rays of the sun. Almost all its heat is derived from the ground, partly by direct contact, but mainly through the dark rays[3] which are reflected from the surface of the earth; and hence not only is the temperature greater or less in accordance with the elevation, but also in accordance with the nature of the ground (its power of absorbing or reflecting heat). For this reason, too, the decrease in temperature with elevation is the more rapid the more isolated a mountain is—most rapid of all in balloon ascents. (3) Air is more readily heated the greater the amount of vapour it contains, since vapour absorbs the heat of the dark rays to an enormously greater extent than dry air; and, as a rule, the lower the elevation the greater is the amount of vapour present. The presence of vapour is of special importance in preventing the loss of heat by night, and hence dry regions even on plains are subject to great extremes of temperature by night and day, which has this advantage, that during the cold nights the ground becomes so chilled that what moisture there is near the surface becomes deposited in the form of **dew**.

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[1] See p. 48.

[2] See pp. 67, 69, 85, 185, 204 *n* 2, 220, and comp. p. 282.

[3] That is, rays of heat unaccompanied by light.

On account of the variations in the circumstances affecting the decrease of temperature with elevation, the rate of decrease varies so much that no general rule can be given with regard to it. For the first 1,000 feet the rate of decrease is about 1° Fahr. for every 90 feet of ascent.

The Snow-line.—Whatever the rate of decrease may be, it is everywhere sufficiently rapid to allow of the existence in all latitudes of mountains which rise above a limit beyond which their sides are clothed winter and summer with snow—the limit shortly called the snow-line. Even in the torrid zone near the equator a mountain 16,000 feet in height rises beyond that limit. The elevation of this line does indeed depend largely on temperature, and more particularly on the temperature of the hottest months, but is not determined by that exclusively. The moisture of the climate has a marked effect upon it and where more snow falls in the course of the year on the sunny than on the shady slopes of a mountain range, the former side, which usually has the higher, may have the lower snow-line, as on the Himalayas.[1]

One advantage of this accumulation of snow on mountains consists in this, that it affords a partial protection of the valleys from floods; but this advantage is not the sole one. Below the snow-line the winter cloak of snow is necessary to preserve many of the so-called alpine plants from a greater cold, which would destroy them; and it need scarcely be added that it has a similar advantage in plains that have a regular winter garment of the same nature. It is in consequence of this protection that winter wheat can be grown in Canada and the Canadian North-West, while it cannot be grown in the south-east of Russia, where the dryness of the air, and the consequent scantiness of the snowfall, leaves the seed exposed to the rigours of the winter frosts.

Glaciers.—In the folds or high-lying valleys of snow-clad mountains the snow gradually sinks through the pressure from above, and, after passing through a stage[2] in which it is composed of large granules which are neither ice nor snow (due to melting by day and freezing by night), at last gets consolidated into a mass of ice, called a glacier. The behaviour of a glacier is highly remarkable. Solid as it is, and rigid and brittle as we know ice in small lumps to be, the glacier moves slowly downwards like a river. It moves, that is to say, quicker at the surface than at the bottom, quicker in the middle than at the sides, quicker towards the inside of concave bends in its course than towards the opposite side. The rate of motion, however, is so slow as to amount in the Alps to only a few inches per day. The mode of its motion is

[1] See p. 68, c.

[2] In this stage known as *névé* (French), or *firn* (German).

difficult to explain, but it is known that even below the freezing-point ice can be melted by extreme pressure and that the water will at once freeze again when the pressure is removed; and it is also known that fragments of ice readily get re-frozen into a solid lump. Most probably, therefore, the motion which makes a glacier appear as if it were composed of a very thick or viscous fluid, is due to crushing or melting of the ice at different places, and to the melted parts freezing again, or the crushed parts becoming re-consolidated when they have escaped from the action of the crushing or melting force. The level to which a glacier may descend depends (like the snow-line) upon the temperature and the amount of moisture by which it is fed, but it is usually thousands of feet below the limit of perpetual snow.

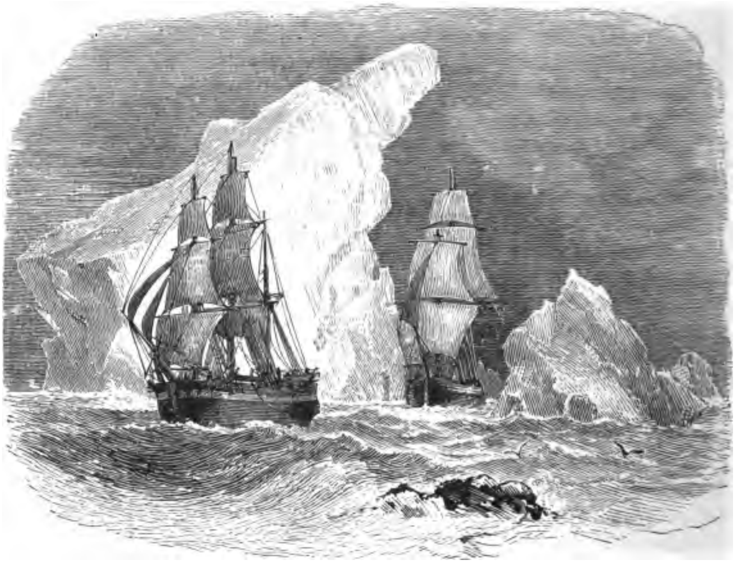

FIG. 13.—ARCTIC ICEBERGS.

Slow as the motion of a glacier is, so great is their mass (hundreds and sometimes thousands of feet thick), that glaciers act even more powerfully than running water in wearing away the land. They round off the inequalities in the surface of their bed, scratch the rocks, and bruise the smaller fragments against one another, and press the soft materials of their bed into a tough clay. From an ice-cavern at their lower end almost invariably issues an ice-cold turbid stream (glacier milk), the solid matter in which is in part an evidence of the grinding action of the glacier mass. Yet this solid matter is far from being wholly due to the grinding of the glacier on its bed. Much of it comes from above. By the process already explained frosts cause great quantities of matter to be poured down upon the surface of the glacier from the rocks which bound and surmount it, and the finer matter is washed down by the rains and melted ice, which chiefly feed the stream at the bottom, through the numerous fissures by which the glacier is traversed. The larger fragments remain at the sides of the glaciers, forming **moraines.**[1] Where two glaciers from two adjoining valleys unite, a **middle moraine** is formed by the union, and in the end many of these fragments are strewn at the foot of the glacier, where they form an **end moraine.** From the existence of such deposits at levels far below their present ones (as well as from other signs), it is known that at some remote period (yet geologically a recent one) glaciers in many parts of the world covered an enormously greater extent than they do now.[2]

Icebergs and Ocean Ice.—Where (in high latitudes) glaciers descend below the water's edge in sufficiently deep water, their ends get broken off, and float away as icebergs, which also have in certain parts of the world an important effect on climate. From the mode of their origin it will be observed that they are composed of fresh-water ice, and in computing their true size the relative weight of fresh-water ice and sea-water must be taken into account. The difference in weight between these two substances is such that only from one-tenth to one-ninth of the whole mass of an iceberg rises above the surface. The actual depth below the surface depends largely on the form of the iceberg, but has been found in certain cases by actual observation to be more than eight-ninths of the total height. In the case of regular flat-topped icebergs (such as are very common in the Southern Seas), it may be always assumed that that proportion of the total height is beneath the surface; and accordingly a single iceberg of such a size as has been observed on more than one occasion may contain as much as a cubic mile of ice. One of three miles in length, and about 200 feet high, which was seen during the *Challenger* expedition, would have that bulk even if its width was only one-third of its length.

From the high latitudes where they take their birth, icebergs are drifted into lower latitudes by the cold currents which issue from Arctic and Antarctic Seas, and hence the set of these currents has an important effect on their distribution. Owing to the general north-easterly drift of the waters of the Southern Seas, icebergs may be encountered in comparatively low latitudes at many places in the south, but in the north they are confined to the western parts of the Atlantic and Pacific Oceans. It is only in these parts that they

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[1] See cut, p. 163.

[2] At this period, known as the *Ice Age*, the greater part of the British Isles appears to have been covered with ice, in some places thousands of feet thick.

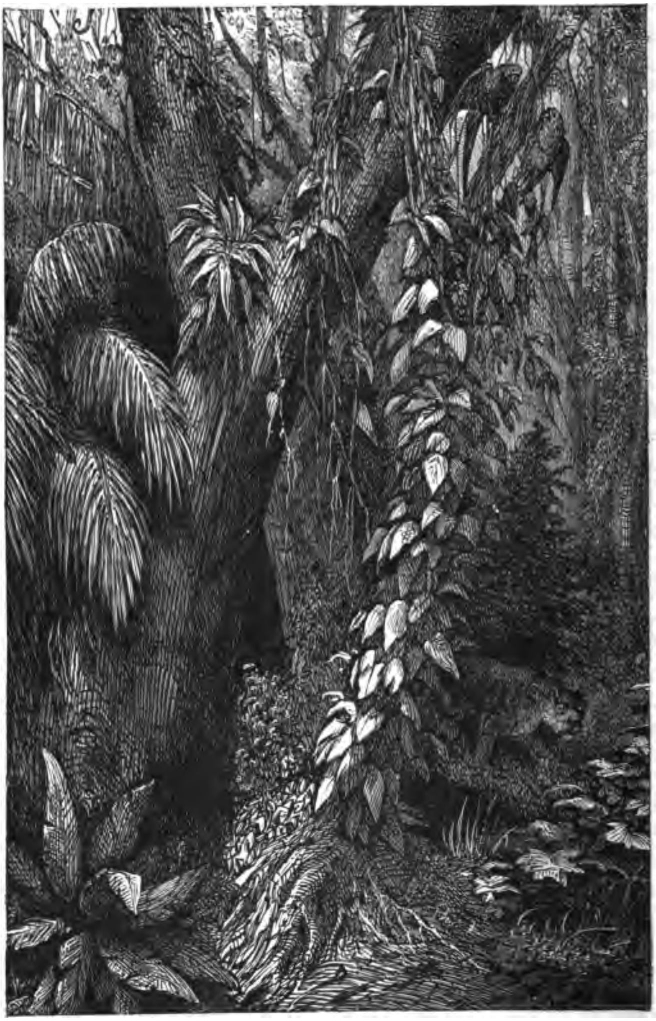

FIG. 14.—SCENE IN A TROPICAL FOREST (BRAZIL).

descend below 40° N., whereas they may be fallen in with at 40° S., or even lower, everywhere in the South Atlantic Ocean.

The freezing of salt water takes place at a lower temperature than that of fresh—about 29° Fahr., instead of 32°—and the ice when formed is different in composition from the water of the ocean, which in freezing manages to get rid of a good deal of its salt. It is met with in various forms. When covering wide surfaces it is called **field-ice**; a large floating mass is called a **floe**; pieces of broken ice closely crowded together constitute **pack-ice**; and when floating about more freely in the direction in which they are carried by currents, they are known as **drift-ice.** The greater cold of the eastern shores of the Old World, as compared with those of the New, allows of the freezing of the China Sea below latitude 40°, while in North America the most southerly sea that freezes is the Gulf of St. Lawrence, about eight or ten degrees farther north. In both of these cases, however, the freezing is promoted by the exceptional freshness of the waters.

Salubrity.—The healthiness of a climate depends on such a variety of circumstances that little of a general nature can be said on this subject. A healthy climate for the natives of the region is often unhealthy for the natives of other regions. All low-lying tropical lands are more or less unhealthy for Europeans, and in warm countries generally, whether tropical or outside of the tropics, stagnant water is peculiarly unhealthy, producing malaria, and rendering the inhabitants liable to fever and ague.

Vegetation and Animal Life.

The vegetation of the land surface of the earth often has a distinct stamp in accordance with the physical features, and the nature of the animal life is greatly affected by the vegetation. Heat and moisture are the conditions most favourable to vegetable life; **the most luxuriant vegetation, therefore, is to be found in the moister parts of the torrid zone** (the valley of the Amazon and the islands of the Eastern Archipelago), **and the moister and warmer parts of the monsoon area.** Dense forests, composed of an almost endless variety of trees and filled with an even greater variety of vegetable life of other kinds, are characteristic in all these regions, except where there are thickly inhabited plains. Trees even advance into the ocean, forests of **mangroves** lining coasts within and near the tropics for hundreds of miles together, especially about the mouths of rivers. **Palms** are also highly characteristic, about a thousand different kinds being found within the tropics, and none far beyond their limits. Almost equally characteristic among animals are **monkeys**, **parrots**, and **termites or white ants**, the last of which are terrible devastators, and in some places, from the ravages which they commit among woodwork, compel the inhabitants to build houses of such light structure that they can easily be restored when their timbers have been hollowed out by these insects.

In the **temperate zones the variety of vegetation diminishes**, and in the cultivated parts of those regions the forests are for the most part confined to the mountains. There they are of use, like snow, in arresting the moisture and thus helping to protect the river valleys from inundation, as well as to prevent mountain pastures from being washed away by the violence of the rains. Still further north, forests, less varied still in their character, being now chiefly composed of pines and firs, again cover the plains, and are haunted by fur-bearing animals. Trees, shrubs, and herbs all in turn disappear, until at last on the borders of the Arctic seas the only vegetation consists of mosses and lichens, uniform in their character, but often rich, splendid, and highly varied in colouring.

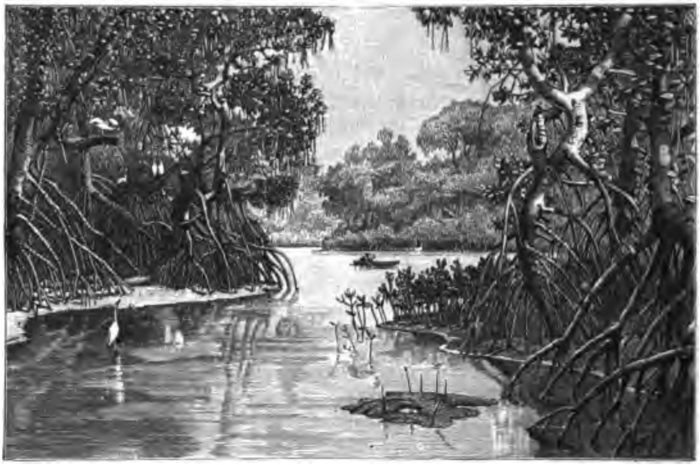

FIG. 15.—A MANGROVE SWAMP.

Characteristic changes are likewise observed if we pass to warm but arid regions. In **steppes**, grasses and lily-like plants, which by means of their thick matted roots and their large underground bulbs are enabled to withstand long periods of drought, are the prevailing vegetation; and hence burrowing animals which feed on these roots and bulbs are among the characteristic fauna (the bobak in South Russia, the prairie-dog in North America, the vizcacha in South America). Above ground, fleet-footed antelopes, horses, oxen, &c., graze the herbage, and these are followed by the carnivorous animals which make them their prey. In the vegetation of dry regions, trees and bushes with thick leathery leaves, with fleshy stems and prickles, like the cactuses of the interior of America and the euphorbias of Africa, are also characteristic. In deserts where there is any vegetation at all it is mostly composed of prickly plants (on which only the camel can feed); and in salt steppes the chief covering of the ground consists of pale green herbs (salt-bush, &c.), which sometimes afford good fodder for sheep and cattle.

The increase in cold with elevation causes similar changes in vegetation to be observed in ascending a mountain to those which are seen in going from lower to higher latitudes. A snow-clad tropical mountain exhibits all the varieties of vegetable life met with between the equator and the Arctic Regions.

Man.

The vigorous vegetation of the moister parts of the torrid zone is in itself unfavourable to the development of man, leaving little room for human habitations; while the enervating effect of the heat and the ease with which food can be obtained from the vegetable kingdom, cause him to be little disposed to contend with nature so as to keep down the aggressive plant life. Hence the island of Java and some parts of southern India are the only regions of the torrid zone in which the density of the population approaches that of the more populous districts of Europe. Both of these countries, it should be observed, are now under European control. In Java the present density of population is a direct consequence of European (Dutch) management; and though southern India may have had a tolerably dense population before it came under British influence, it must be noted that the greater part of that region suffers rather from a deficiency than from an excess of moisture. The oldest civilisations of which we have any record arose in the warmer parts of the temperate zone, and were in some cases (Assyria, Babylon, Egypt) assisted in their growth by regular inundations, which fertilised the ground and facilitated irrigation. The colder parts of the temperate zone, where the most advanced civilisations are now found, had to a large extent to be made fit for human habitation by the clearing of forests and the draining of marshes,[1] and the seeds of civilisation were planted there by people who had become powerful in warmer and drier regions. Rome laid the foundation of the higher forms of civilisation throughout a great part of Europe, both in the warmer and the cooler and moister regions; and even where it did not do so directly its example was, no doubt, directly or indirectly, of great importance in promoting that development elsewhere.

In particular, it is to Rome that southern and western Europe owed the first construction of many of their chief **roads**, for road-making was one of the principal means adopted by that power for the spread of her own civilisation. Roads, indeed, are an essential condition of the maintenance of a dense population wherever there is not an exceptional abundance of waterways.

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[1] See pp. 102-3.

The ease with which a country can be supplied with roads is accordingly a circumstance of great importance with reference to the growth of its population, and this does not depend solely on the superficial configuration. Mountainous countries present one obstacle to road-making too obvious to need pointing out; but vast level plains may present obstacles of another kind, as in the plains of Hungary, where there is an entire absence of road-making material, and in those of Russia and Siberia, where, in addition to that deficiency, extensive marshes or soft ground offer further difficulties. Hence in such countries the construction of railways in quite modern times is a fact of peculiar importance. The railways (as well as the roads) of mountainous countries show the importance of superficial configuration by the way in which their course marks out the lowest levels and the easiest slopes. And here we may note that the importance of rivers with regard to communication does not lie solely in their navigability, but largely arises from this: that the valleys which they, with the help of rain and other denuding agents, have made for themselves often contain the routes along which roads and railways are most easily carried.

The Growth and Position of Towns.—Where a dense population exists, it is in some places pretty equally distributed over the surface, in others congregated to a great extent in large towns. Each town has its own history, and though the growth of all towns must depend more or less on physical features, the conditions that favour their growth are so varied that it is impossible to say why certain towns should be in certain places without taking that history into account.[1] Nevertheless there are one or two general facts of interest which it is well to bear in mind regarding the growth and position of towns.

Most towns, whatever their subsequent history may be, are originally centres of trade. They arise in places where it is most convenient for the products of a district to be collected in order to be sent out again in other directions to the places where they are required. Hence it is that in new countries with a one-sided industry, like the United States and the British colonies of America and Australia, which are chiefly engaged in the production of food and raw materials, large quantities of which they must send to Europe in order to supply themselves thence with manufactured articles, large towns have grown up with extraordinary rapidity (Chicago, St. Louis, San Francisco, Melbourne, Sydney).

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[1] The modifications which man himself makes in the physical features of the globe have in many cases an important influence on the position of towns. It is for this reason, among others, that many of the chief towns of Roman Britain no longer have the importance which they once had.

When the positions most generally occupied by towns are considered, the influence of trade in promoting their growth may be observed under most of the heads under which these positions may be classified.

(1) Out of 288 towns which, according to the most recent returns or estimates, had a population of at least 100,000, 102 are seaports—either situated on the sea-coast or near the mouths of rivers where they are navigable for sea-going vessels. In the case of river seaports, the situation is sometimes (*a*) at the highest point to which the tide rises (Glasgow, Antwerp), (*b*) at the head of navigation for large vessels, (*c*) at the head of navigation for smaller sea-going vessels. The increase in the size of sea-going vessels in modern times has in several cases led to old seaports being wholly or partly superseded by newer ones nearer the mouth of the same river or its estuary, as Bordeaux by Pauillac, Nantes by St. Nazaire, Rouen by Havre, Bremen by Bremerhaven; in other cases it has led to the artificial deepening of the old port and its approaches (Glasgow, Seville).

(2) Of towns which are not seaports, a large number are on navigable rivers, and among these (*a*) many lie at or near the confluence of two rivers (Allahabad, St. Louis); (*b*) many at river bends, where merchandise has to be landed in consequence of the change of direction in the stream (Cincinnati, Timbuktu, Galatz, Kazan); (*c*) many at the lowest point at which a river can be bridged (Buda-Pest, St. Louis), or at some point where the nature of the banks makes the bridging of the river exceptionally easy (Magdeburg); (*d*) many at the head of navigation (Ulm).

(3) Many towns (whether situated on navigable rivers or not) owe their importance to their situation at the meeting-place of trade routes. In this case they may occupy either (*a*) a central position in plains, such a position being the natural crossing-place of roads from all quarters (Moscow, Bukarest); (*b*) a site in a fertile valley at the foot of a mountain pass (Tiflis), or the point of convergence of several passes (Milan); or (*c*) a position on the edge of a desert across which caravans carry the merchandise collected from other quarters by roads or rivers (Damascus, Timbuktu, Harrar, Lahore, Delhi).

(4) In many cases facilities for defence first led to the rise of towns, but their subsequent growth is greatly affected by their possession of advantages for trade such as have been pointed out.

(5) In modern times districts rich in coal and iron have become the seats of numerous large towns engaged in large manufacturing

industries (round Manchester, Leeds, and Birmingham in England; in Belgium; in the Prussian province of Westphalia, &c.), and some towns so situated are remarkable for their rapid growth (Barrow).

Towns once in existence (whether they owed their origin to advantages for trade or not) tend to grow in size for various reasons, and the causes of growth are generally most numerous in capitals, which accordingly are often very populous even where the physical features are not specially favourable to their development.

In the diagram on p. 63 A and B represent a section across Central Europe about the meridian of 8° E.: A, vertical 6 times the horizontal scale; B, vertical 15 times the horizontal scale. *a*, Col di Tenda; *b*, Turin; *c*, Monte Rosa; *d*, Mischabelhorn; *e*, Rhone valley (Brieg); *f*, Jungfrau; *g*, Aar; *h*, Rhine; *i*, Feldberg (Black Forest); *j*, Middle Rhine valley; *k*, Hardt; *l*, Westerwald; *m*, North German plain.

C. Section across Asia about the meridian of 87° E., from the valley of the Ganges to the delta of the Yenisei. *a*, Mt. Everest; *b*, Tibetan plateau; *c*, Kuen-lun; *d*, Altyn-tagh; *e*, Tarim basin; *f*, Tian-Shan; *g*, Byelukha (Altai); *h*, Siberian plains.

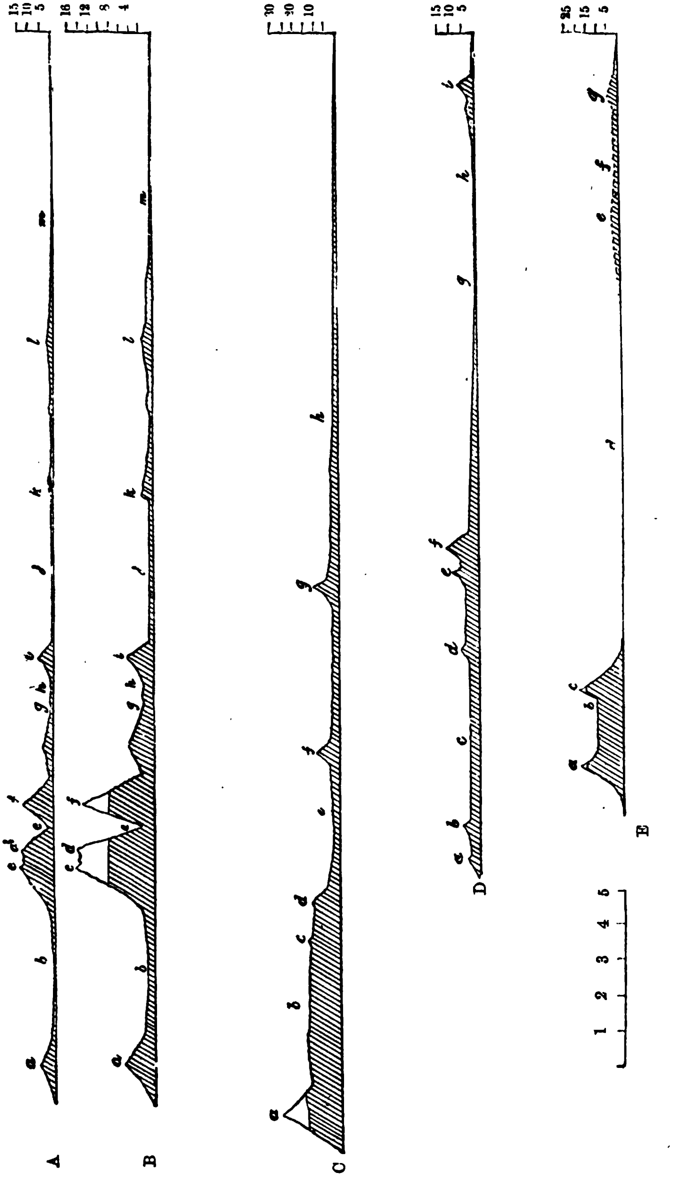
D. Section across North America about the parallel of 40° N., from the west coast to the Mississippi valley and thence south-eastwards to the Atlantic. *a*, Coast Range; *b*, Pilot's Peak (Sierra Nevada); *c*, The Great Basin; *d*, Wahsatch Mts.; *e*, Dome Peak; *f*, Long's Peak; *g*, Mississippi; *h*, Ohio River; *i*, Black Dome (Appalachian Mts.)

E. Section across South America about the parallel of 16° S. *a*, Misti; *b*, Lake Titicaca; *c*, Sorata; *d*, Amazon Basin; *e*, *g*, Brazilian mountains (elevations uncertain); *f*, San Francisco River.

The horizontal scale represents hundreds of miles for C, D, and E, intervals of 20 miles for A and B. In C, D, and E, the vertical is 30 times the horizontal scale. In B, C, and E, the untinted portion shows the height above the snow-line. The figures on the vertical scales indicate thousands of feet.

COMPARATIVE TABLE OF THE GREAT LAND MASSES OF THE GLOBE.

	Area in millions of square miles	Percentage of the total land surface	Ratio to Europe	Population in millions	Density of population
Asia	17·3	32·8	4·7	800	46
America	14·8	28·2	4·0	100	7
Africa	11·5	22·0	3·1	200	18
Europe	3·7	7·1	1	335	90
Australia and Oceania	3·5	6·6	0·9	4	1·2
Arctic and Antarctic Regions	1·7	3·3	0·5	—	—


A
15
10
5
a
b
c
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B
16
12
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EUROPE.

Approximate latitudes: North of Norway, 71° N.; south of Spain (north of India), 36° N.

Approximate longitudes: Ural Mountains, 60° E.; west coast of Iberian Peninsula, 9½° W.; of Iceland, 24° W.

The eastern boundary of Europe has always been a matter of dispute, for in the east this continent is united to Asia in such a manner as to form only a peninsula of the latter continent. Yet Europe has from the first been recognised as distinct, (1) because the earliest civilisation in Europe was in the south, where it is divided from Asia by seas, and (2) because Europe, as a whole the most densely populated of all the continents, has so much in common in the history of its inhabitants.

The area varies according to the boundary line adopted in the east. On the whole, the most convenient line to adopt is that of the Ural Mountains, the Ural River, the Caspian Sea, and in the south-east a line running east to west through what is called the **Manich Depression**, from being partly traversed by the Manich, a tributary of the Don. By the adoption of this boundary the whole of the Caucasus region is assigned to Asia.

Within the boundary indicated, the area is about three and three-quarter millions of square miles—more than forty times the area of Great Britain.

The **coast-line** is the longest relatively to area of any continent, and the advantage of this to shipping is increased by the fact that the length of coast-line is due not merely to a large number of small indentations, but to its running out and in in such a manner as to form large inland seas and gulfs with peninsulas between. The interior is thus brought nearer to the sea, and in fact no part of Europe is as much as 1,000 miles distant from the coast.

All the seas and gulfs in the north are shallow, while all those in the south, except the Sea of Azof, are deep.

If the level of the whole continent with the surrounding seas were raised 600 feet, which is not much more than the height of the highest buildings above the ground, the White Sea, the North Sea or German Ocean, the Baltic with its branches, would all be converted into dry land with the exception of a few small basins, and at the same time the west coast of Europe would be extended so as to run from the west of Norway round the Shetland Islands, the Hebrides, and the west of Ireland, and then back to the south-east corner of the Bay of Biscay. Deep seas would, however, still remain along the south of Europe, although the greater part of the Adriatic, between Italy and the Balkan Peninsula, would be added to the mainland. Sicily would be united to Italy, Corsica to Sardinia, and Majorca to Minorca.

Beyond the line that would then form the west coast of Europe the depth of the ocean increases rather suddenly, so that that line may be held to mark the permanent boundary of the continent, and all the seas within it belong to the variable belt[1] which in some ages is dry land, in others water. All the islands within this belt are hence European islands; but the **Faroe Islands** and even **Iceland** are also considered European, because they have long been held by European powers, and because their climate resembles that of Europe more than the adjacent parts of America.

Europe has three great inland seas: **the Baltic, the Mediterranean, and the Black Sea.** They are called inland because they communicate with the ocean or with other seas only by narrow straits or channels. The Baltic communicates by means of the **Kattegat,** between Denmark and the south-west of Sweden, with the **Skager Rak,** a branch of the German Ocean; the Mediterranean with the Atlantic Ocean by means of the **Strait of Gibraltar** (less than nine miles wide); and the Black Sea, by means of the **Bosporus,** with the Sea of Marmora, which itself communicates by the **Dardanelles** with a branch of the Mediterranean.

The Mediterranean and Black Sea contrast with one another in several respects besides depth. The Baltic lies in a region where rains are plentiful and evaporation slight, and where accordingly numerous rivers convey abundance of fresh water to the sea, but little is returned to the air; the Mediterranean in a region where rains are scanty and rivers few, but evaporation brisk. The Baltic thus has its water made very fresh (in some parts less than one-fourth as salt as that of the ocean), the Mediterranean, on the contrary, salter than that of the ocean. The former tends to have its level raised by the fresh water poured into it, the latter to have its level lowered by the rate at which fresh water is drawn up from it as vapour by the power of the sun. Hence the Baltic is constantly overflowing—that is, a current is constantly running outwards from it into the German Ocean; the Mediterranean, on the other hand, is constantly receiving an overflow from the Atlantic. A current flows inwards at the Strait of Gibraltar, and, advancing along the north coast of Africa, is often a great hindrance to sailing vessels.

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[1] See Introd. p. 25.

Tides are scarcely felt in either sea. The currents at the mouth prevent them from sharing in those of the ocean, and they are too small to have great tides of their own.[1]

With respect to the **surface**, the mainland of Europe may be divided into **three regions.** (1) In the north there is a highland or mountainous region occupying the peninsula of Scandinavia. (2) Another mountainous region occupies the greater part of the south, reaching farthest north about the middle, where its boundary advances in Central Germany nearly to the latitude of London, receding thence south-westwards through the middle of France to the Pyrenees, and south-eastwards to the mouth of the Danube. (3) Between these two mountainous areas in the north and south there is a vast plain which stretches continuously from the shores of the English Channel and the German Ocean to the east of Europe, and in Russia spreads out north and south from the shores of the Arctic Ocean to those of the Black Sea.

The principal mountain systems are those of the **Alps**, the **Pyrenees**, the **Carpathians**, and the **Ural Mountains**.

From the smaller size of the continent and the way in which the surface is broken up and the outline indented, it follows that there can be no such large **rivers** in Europe as in Asia, Africa, and America. The largest are the **Volga** and **Danube**; the Volga in the great European plain, the Danube in the depression between the Alps and the Carpathians.

Though wanting in large rivers, Europe has three advantages in its river system. (1) The **rivers**, though short, are very **numerous**, **and are almost all navigable** for a longer or shorter distance, so that they serve to bring a great number of points on the coast into communication with the interior. (2) **The chief rivers radiate from common centres**, and thus bring the same inland regions into communication with far distant coasts. Two important centres should be remembered: (a) The **Alps**, whence flow the Rhine to the German Ocean; the **Rhone, Po, and Adige**, to the Mediterranean; and several tributaries of the **Danube** to the Black Sea. (b) The region in the heart of Russia, of which the **Valdai Hills** are the centre, the region from which flow the **Volga** to the Caspian Sea, the **Don** and **Dnieper** to the Black Sea, the **Western Dwina** and **Niemen** to the Baltic, and a tributary of the **Northern Dwina** to the White Sea. (3) The chief rivers, and hence different seas, have been **very easily brought into communication by means of canals.** The Caspian is thus brought into communication with the Baltic,[1] the Black Sea with the Baltic and German Ocean, the Mediterranean with the German Ocean and the Atlantic.[2] The highest part of the connecting canals is generally under 600 feet, and in no case more than 1,400 feet above sea level.

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[1] See Introd. p. 45.

The **principal lakes** are in two great groups. One group lies round the Baltic, and includes large lakes in Russia (**Ladoga,** the largest in Europe, **Onega,** and **Peipus**), and in Sweden (**Wener, Wetter,** and **Mälar**), and a large number of small ones in Russian Finland and North Germany. The other group is situated north and south of the Alps,[3] chiefly in Switzerland and Italy, the largest in this group being only about one-third of the size of the smallest of those mentioned as belonging to the former group.

The continuous series of mountains along the north of the **Mediterranean peninsulas** has a very important effect on the **climate and vegetation** of this region, which is thus very distinctly marked off from all the rest of Europe. The mountains serve to ward off the cold winds from the north and north-east,[4] and hence the temperature here is remarkably equable all the year round. The effect of the mountains is very clearly brought out in comparing places lying to the east of the limit to which they extend with others lying under their shelter. Constantinople lies beyond that limit, and the temperature of January there is ten degrees lower than in Naples, which lies in nearly the same latitude. The broad and deep Mediterranean assists in mitigating the extremes of temperature (see p. 50).

The Mediterranean region also differs from the rest of Europe in its **rainfall.** The summers here are the driest part of the year, and in the extreme south they are almost without rain. Hence the rivers, and especially those of the south, are poorly supplied with water in summer, and many of them in that season dry up altogether. For navigation they are of little use, but, on the other hand, much needed for irrigation.

This dearth of rain and the high temperature necessarily have a great influence on the **vegetation** and occupations of the people. In the first place, pastures fit for the rearing of cattle are few and far between. Dairy produce, and in particular butter, is consequently scanty. The place of butter is, however, taken by the **fruit** of a tree, the **olive**, which is in every way characteristic of the Mediterranean. It is a tree peculiarly fitted by its thick leathery leaves to stand the long summer droughts, and trees and shrubs of this kind form a large proportion of the forests and plantations of the whole region, except on the moister mountain slopes. Besides the olive, **southern fruits** are the characteristic products of the Mediterranean peninsulas, these including all the members of the orange tribe (oranges, citrons, lemons, &c.), all grown on trees similar to the olive, figs, pomegranates, grapes, almonds, pistachios, and chestnuts. **Agaves**,[1] or American aloes, and **cactuses**, both fleshy plants, though introduced only after the discovery of America, have run wild everywhere, and often form the hedges round gardens.

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[1] See p. 180. [2] See p. 136. [3] See pp. 168, 200. [4] See p. 52.

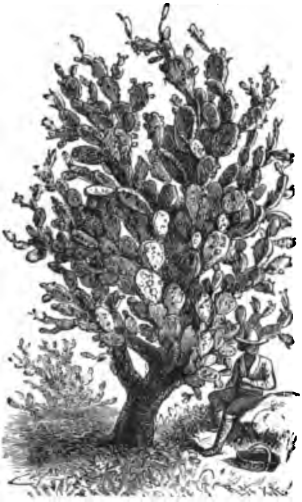
FIG. 16.—THE OPUNTIA CACTUS, OR PRICKLY PEAR.

North of the Mediterranean region, Europe is far from having a uniform climate, but the changes are more gradual; and what is most striking is the fact that these are greater from west to east than from north to south. In this part of Europe, in consequence of the influence of the Gulf Stream,[2] we see more markedly than anywhere else in the world the characteristics of the west coast climate of the northern hemisphere—cool summers, mild winters, and plentiful rains. To the east the winters become colder, the summers warmer, the rains on the whole scantier. Hence it is that while the seas on the coasts of Norway are never frozen, even within the Arctic circle, and icebergs are always kept far away from the Atlantic shores,[3] the rivers in the south of Russia (in the latitude of the middle of France) have their navigation stopped by ice for a shorter or longer period every year. The difference between east and west is even more striking when we compare the two sides of the Scandinavian peninsula.[1] The Gulf of Bothnia is frozen right across every year, so that it can be crossed by sledges; even the harbour of Christiania, at the head of the Skager Rak, is regularly closed for three or four months, and the drift ice in the Baltic is a serious hindrance to navigation till late in the spring. It must be remembered, however, that in these inland seas not only the greater cold (due to the high lands intervening between them and the Atlantic), but also the greater freshness of the water, is favourable to freezing.[2]

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[1] See cut, p. 297.
[2] See Introd. pp. 47, 51.
[3] See Introd. p. 56.

The influence of the west coast climate on the growth of cultivated plants is very conspicuous. While barley can be grown in Norway as high as 70° N., the limit of its cultivation descends even on the Gulf of Bothnia to 65° N.; apples, pears, and cherries can be grown even round Throndhjem (63° N.) in Norway, but in Russia only as far north as Moscow and Kazan, in lat. 56° N. (the same as Edinburgh). Still more instructive is the northern limit of the vine, which first ascends from the west coast and then descends in the east, beginning in the west near the mouth of the Loire in 47½° N., passing by way of Paris north-eastwards to about latitude 52° in the east of the kingdom of Prussia, and then descending south-eastwards through the south of Russia to the north of the Sea of Azof and Astrakhan (about 47° N.) In the west the limit is fixed by the insufficiency of the heat of summer, in the east by the excess of cold in winter.

The **easterly decrease in the amount of rainfall** is less marked than the increase in the extremes of heat and cold; for the increasing cold of winter favours condensation, the increasing heat of summer favours evaporation.[3] Hence there is a more striking contrast between east and west in the period when most rain falls. In the west the rainiest season is autumn; in the east, summer. The driest parts of Europe are in the extreme south-east of Russia, where agriculture is in consequence impossible.

Regarded as a whole with reference to its **productions**, Europe is remarkable for the amount of manufactured goods which it produces and exports to other continents. This pre-eminence it owes to three causes: (1) that here the inventions by which the great manufactures are carried on had their origin; (2) that here there is a remarkable abundance of coal and iron in situations near the sea, and hence favourable to transmarine commerce; and (3) that the varied outline, so advantageous for commerce, enables Europe easily to procure supplies of the raw material used in manufactures from other parts of the world, and to send away the manufactured goods.

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[1] See Introd. p. 52 (8) (*a*). [2] See Introd. p. 57 [3] See Introd. pp. 49–50.

The production of cereals in Europe is still, however, between two and three times as great as that of North America. The **principal cereals** are **wheat** and **rye**, the latter being the chief crop in Germany, Scandinavia, and Russia. **Oats** form the principal crop in the north-west, and **maize** in regions which have warm and sufficiently rainy summers. Where the summers are almost rainless wheat will ripen, but maize not, unless the land be irrigated.

Large wild **animals** are now found in Europe only in the more thinly peopled regions. The lion, anciently met with in the Balkan Peninsula, is now extirpated from the continent. **Bears** and **wolves** are now seldom to be seen except in the forests of the east. The **chamois** of the Alps, Pyrenees, and Carpathians is becoming rare, and the **ibex**, another mountain goat, is nearly exterminated. In the far north the **reindeer** occurs both wild and domesticated. Among the domestic animals of the southern peninsulas, **mules** and fine breeds of **asses** to a large extent replace the horses of more northerly countries. Of the **food-fishes, cod, herring**, and **salmon** are the most important in the northern seas; **tunnies, sardines**, and **anchovies** in the Mediterranean; and the **sturgeon** is the most valuable in the rivers of the east.

The **population** of Europe is still under 350 millions, though it is rapidly increasing. Its density is about ninety to the square mile, and hence much greater than that of any other continent.[1]

The regions in which the **population is densest** are England and the south of Scotland, Belgium and the Netherlands, Saxony, various parts of the Rhine basin, and northern Italy, in all of which the density exceeds 300 to the square mile.[2]

The rapid increase of population in Europe, together with the desire to make use of the advantages of European civilisation to develop the natural wealth of the thinly peopled continent of America and other parts of the world, has led to a constant stream of **emigration**, which has flowed without interruption since the discovery of America, but in this century more rapidly than ever. At first these emigrants were chiefly Spaniards and Portuguese, now they are mostly of Teutonic race (English, Germans, Scandinavians), besides Irish. Next after these come Italians, who are the chief emigrants to the South American republics. The total population of European descent outside of Europe is now estimated at seventy millions.

The immense majority of the people speak **languages** which are allied to one another, and are hence inferred to be all modified forms of the same language (now long extinct). The people speaking these languages may also be presumed to be mainly (though not wholly) of the same descent. These allied languages are called **Aryan,** and the people speaking them are said to be of the Aryan stock. The original home of the Aryan peoples is believed to have been somewhere in Asia, and Europe seems to have been occupied by successive bands of Aryans, each of which had a language differing more or less from that of the others. Hence **the Aryan languages are divided into families** or smaller groups, three of which are now spoken by about 300 millions of the inhabitants of the continent. These three great European families of Aryan languages[1] are (1) **the Teutonic,** in Germany, Scandinavia, Denmark, the Netherlands (including part of Belgium), and the British Isles; (2) **the Romance,** in certain countries where Roman influence formerly prevailed (Italy, the Iberian Peninsula, France, and part of Belgium, Roumania, &c.); (3) **the Slavonic,** in the east and south-east.

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[1] See table, p. 62.

[2] See table, p. 320; and comp. p. 111 *n*. 4.

Less important Aryan families in Europe are the Keltic, now confined to certain isolated districts in the British Isles and France; the Hellenic, in part of the Balkan Peninsula and in the Grecian Archipelago; and the Lithuanian, in part of Russia.

Among **non-Aryan** peoples, the most important are those speaking the languages known as **Finno-Tatar,** including those of the Finns and Lapps in the north, the Magyars in Hungary, the Turks, and many tribes in Russia. A small but very interesting race is that of the **Basques,** on both sides of the Western Pyrenees, that race being a remnant of very ancient inhabitants of Europe, and speaking a language quite peculiar.

As regards **religion,** the bulk of the inhabitants of Europe profess different forms of **Christianity.** About half of these are Roman Catholics (chiefly in southern Europe), and the remainder are nearly equally divided between Protestants (chiefly in the Teutonic part of the continent) and adherents of the Greek Church (in Russia and the Balkan Peninsula). **Mohammedanism** is the religion of the Turks and some other inhabitants of Eastern Europe, and there are between five and six million **Jews** scattered through the different countries (chiefly in the East).

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[1] See also Asia, p. 221.

THE BRITISH ISLES.

Approximate latitudes: (Winnipeg), South point of England, (Prague) 50°; south of Ireland, Cardiff, London, 51½°; Dublin, Liverpool, Sheffield, (Hamburg) 53½°; Newcastle, Londonderry, 55°; Edinburgh, (Copenhagen, Moscow) 56°; north coast of Scotland, 58½°; north of Shetland Islands, 61°.

Approximate longitudes: East of Suffolk, 1¾° E.; Land's End, 5¾° W.; Cardiff, Liverpool, Carlisle, Edinburgh, 3° W.; mouth of Shannon, 10° W.

The British Isles occupy the submerged bank[1] in the north-west of the continent of Europe, with which they must have been connected at a quite recent geological date.

Among other proofs of this is the fact that, almost without exception, the animals and plants native to the British Isles belong also to the continent, for it is always found that where an island has been separated from the mainland from a very remote period, its animals and plants are considerably different from those of the neighbouring land.

The nearest point to the continent is in the south-east, where the **Straits of Dover,** about twenty-one miles wide, run between England and France. The **Goodwin Sands,** which form a dangerous shallow in the north of these straits, are said to have been submerged less than a thousand years ago.

North of the Straits of Dover the coast-line recedes on both sides, forming a wide sea known as the **North Sea**[2] **or German Ocean,** a sea about 400 miles wide at its widest parts. In the middle of it, between the north-east coast of England and the peninsula of Jutland, lies a shallow tract known as the **Dogger Bank,** where the depth is generally under 100 feet. Here there are important **cod fisheries,** carried on by fishermen from both the opposite coasts.

Great Britain, which is made up of England and Scotland, and forms the larger of the two principal British Isles, is separated from Ireland by seas which in some parts are deeper than any part of the German Ocean except the north and north-east. The widest part of these dividing waters is called the **Irish Sea,** which has **St. George's Channel** on the south, between the south-east of Ireland and Wales, and the **North Channel** on the north, between the north-east of Ireland and Scotland. The last is the narrowest (little broader than the Straits of Dover), but deepest of all.

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[1] See p. 65.

[2] The West Sea of the Danes.

The total **area** of all the British Isles, large and small, is rather more than 120,000 square miles; that of Great Britain alone about 84,000 square miles, with all its adjacent small islands about 90,000 square miles.

The south coast of Great Britain trends slightly to the north-east, and the general direction of that island is slightly to the west of north, so that some parts of the east coast are situated farther west than some points on the west coast. The direction of the south coast of Ireland is nearly parallel to that of England, but the middle line through the length of that island runs almost exactly north and south.

Great Britain is remarkable for the way in which the coast retreats on opposite sides, either in estuaries or large bays, so as to bring important seaports on different coasts within a comparatively short distance of each other. In this way Bristol and London are brought within little more than 100 miles of each other in a direct line; Liverpool and Hull are separated by about the same distance; Carlisle and Newcastle by only half the distance; and Glasgow and Grangemouth by only about twenty-five miles.

The **coast-line** of the British Isles presents other peculiar advantages for commerce. It is indented by numerous bays and gulfs, many of which form excellent natural harbours, and has numerous estuaries, few of which are encumbered by bars at their mouth.[1]

A third great commercial advantage these islands owe to the fact that they lie as nearly as possible in the middle of the land surface of the earth, and it is only since this advantage began to be felt that this country has come to be the leading commercial nation of the world. Before the discoveries of the fifteenth and sixteenth centuries, Great Britain was on the outskirts of the known world instead of its centre, and the commerce of these islands has rapidly increased as the countries then discovered have become more and more thickly peopled.[2]

Since the middle of last century the foreign commerce of the British Isles has been the largest in the world. Only three countries, Germany, France, and the United States, all more populous than the United Kingdom, have a foreign trade approaching in value that of this country; and that of Germany, the largest of the three, is on an average only about two-thirds of that of the United Kingdom. About one-fifth of the British exports consists of articles that have first been imported from abroad, and have undergone no change in this country, a striking proof of the advantage which the country owes to its geographical position. Another advantage consists in the extent of the British colonies and possessions in all parts of the world, for about one-fourth of the entire marine commerce of the country is carried on with countries under the British flag, and more than two-fifths of that commerce is with these and the great English-speaking nation of the United States.

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[1] See Introd. p. 27.

[2] Comp. Italy, p. 202.

The **shipping** of the United Kingdom is even more extensive than its commerce, for multitudes of British ships are employed in carrying merchandise from one foreign port to another. The total tonnage of British vessels is at least four times as great as that of any other European country, and not far short of twice as great as that of the whole shipping of the United States, including river boats and steamers.

In the nature of its **products** the United Kingdom, and more especially Great Britain, is the most characteristic of all European countries, producing an enormous proportion of **manufactured goods.** This is due to the wealth of Great Britain in coal and iron in convenient situations—that is, in places near the sea. The amount of coal produced in the United Kingdom every year is nearly three times as much as in Germany, the country which ranks next in this respect, and the proportion of iron is nearly as great. Hence the **chief exports** are manufactured articles, the chief imports articles used as food and the raw materials of manufacture. Of the exports, by far the most important are **cotton manufactures**, and the next in importance **articles made of iron and steel.** Of cotton cloth there is exported every year considerably more than 100 yards for every inhabitant of the kingdom, equal to about three yards for every inhabitant of the world according to the best estimates of the population. The **principal imports** are **grain**, and above all wheat and flour (chiefly from the United States, India, the Australian Colonies, and Russia), **raw cotton** (chiefly from the United States, India, and Egypt), and **wool** (chiefly from the Australian Colonies, which furnish not far short of three-fourths of the total amount, and the British possessions in South Africa). Live animals and dead meat, dairy produce, all kinds of fruit, tea (from China and India), are also largely imported. Live animals and dairy produce are largely obtained by Great Britain from Ireland.

The **climate** of the British Isles is also very characteristic of the rest of Europe. It is moist, mild, and equable, and moister, milder, and more equable in the west than in the east; in Great Britain much moister in the western hilly and mountainous part than in the eastern lowlands.[1]

In the south-west of Ireland there is a winter temperature like that of Florence in Central Italy, followed by a summer temperature like that of Archangel in the north of Russia. In January, the coldest month in the year, the mean temperature decreases on the whole from the south-west to the north-east, in Scotland more from west to east; but the coldest tract, in which the mean temperature, 38° Fahr., is still six degrees above freezing-point, is an inland area extending from about the latitude of the Wash in England to near the north coast of Scotland. The greatest extremes of temperature are met with in the district round London, where the mean January temperature is 39° Fahr., and that of July, the hottest month, 64°. September is the only month in the year in which the mean temperature decreases pretty steadily from south to north throughout England.

The same **crops** are grown in all the countries composing the British Isles, but the differences in climate cause one crop to prevail in one part, another in another. The **principal corn crops** are wheat, barley, and oats; the **principal green crops**, turnips,[2] potatoes,[3] and mangold.[4]

Wheat, which requires a warm summer, is the principal crop only in England, and even there it generally fails at a level of 600 feet above sea-level.[5] Here, too, the other two cereal crops mentioned occupy a greater area than any of the green crops. Both in Scotland and Ireland oats are the principal crop; and in the former country, turnips, which thrive best where there is a cool summer and mild and genial autumn, come next in importance; in the latter potatoes, which are peculiarly well suited for the light and warm soil and moist climate which prevail there. In all three countries, but especially in Ireland, the extent of grass pasture is very great, a natural consequence of the moistness of the climate. In England such areas predominate in the west, and the counties are accordingly divided into grazing counties and corn counties, the latter lying to the south-east of a line stretching from Salisbury to York. Among special products of particular localities may be mentioned the apple and other orchards of Hereford and Worcester, Devon and Somerset, and the hops of Kent and Essex.

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[1] The average annual rainfall in London is about 25 inches; that at Seathwaite, among the Cumberland Hills, and at some points in the west of the Scottish Highlands, about six times that.

[2] The cultivation of turnips, as well as that of carrots, was introduced only in the seventeenth century (from Holland), and it effected an immense improvement in British agriculture. It was not till the beginning of the eighteenth century that the cultivation of clover and grasses was introduced (from the same country).

[3] The potato, which is said to have been introduced into Ireland from America in the sixteenth century, was long in growing into favour there, and not till the eighteenth century did it become an important crop in England.

[4] A kind of beet grown as food for cattle.

[5] In Scotland wheat is even now little grown, and in 1727 a field of wheat near Edinburgh was so extraordinary a sight as to attract general attention.

Agriculture in general is further advanced in Great Britain than anywhere else in the world, as is shown by the fact that there a greater number of bushels of wheat is grown to the acre than in any other country.[1] Four-fifths of the surface of England is productive in some way or other, but only about two-thirds of that of Wales, and less than one-third of that of Scotland.

The total population of the British Isles at the census of 1881 was upwards of 35 millions, which gives a density of about 290 to the square mile.

Of that total, about 26 millions, or nearly three-fourths, belonged to England and Wales, 3¾ millions to Scotland, and a little more than 5 millions to Ireland. In consequence of the rapid growth of commerce and manufactures within the present century the population has more than doubled since the first census in 1801, but the increase has taken place chiefly in the part of Great Britain to the south of the Firths of Forth and Clyde. The proportion of the population of England and Wales has consequently risen greatly, that proportion having been in 1801 not much more than a half. Since the census of 1841 there has been a constant decline in the population of Ireland, in consequence of the rapid migration of the inhabitants to Great Britain and emigration to countries beyond the Atlantic. The Irish element makes up, in fact, by far the largest proportion of the hundreds of thousands of emigrants who leave the United Kingdom every year.[2]

The British Isles now form a single state often known as the United Kingdom. The head of the state is a king or queen whose dignity is hereditary; but the power of the king or queen is limited by the fact that all laws are passed by a body called a Parliament, while they are carried out by Ministers responsible to Parliament. The government is hence said to be a **limited monarchy.**

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[1] In England the average number of bushels to the acre is about twenty-nine.

[2] Within seventy years from 1815 about 10½ million emigrants left the United Kingdom. The rate of Irish emigration was greatly increased by the famine of 1845–46, due to a failure of the potato crop.

The **Parliament** consists of two Houses—one, the **House of Peers**, composed mainly of hereditary members; the other, the **House of Commons**, composed of elected members. The members of the latter House (670 in all) are returned partly by old divisions of the country called **counties**, partly by towns which are known as **parliamentary boroughs**. All the more populous counties are subdivided for the election of members of Parliament, each division returning a single member, and the larger parliamentary boroughs are similarly subdivided. Scotland, which has been under the same king or queen as England since 1603, had a Parliament of its own till 1707, and still retains her own law and her own Church. Ireland was completely conquered by England under Henry VIII. in the middle of the sixteenth century, but had a separate Parliament till the end of 1800.[1]

For various purposes the countries belonging to the United Kingdom are subdivided in several other ways. One of the oldest and most important of these divisions in all the three countries is into **parishes**, which are originally the areas belonging to particular churches. Several other divisions consist of groups of parishes. In England the parishes in each county are grouped to form **Petty Sessional Divisions**, in which officers called Justices of the Peace, appointed by the Crown, try petty offences and perform other duties. Groups of Petty Sessional Divisions form large divisions in which the justices meet once a quarter to hold courts of **Quarter Sessions**. Each county has at least one court of Quarter Sessions, the larger ones more than one. Other groups of parishes form unions for affording aid and shelter to the poor under the Poor Laws (**Poor Law Unions**), and these are generally identical with **Registration Districts**, or the districts formed for the carrying out of the law relating to the registration of births, marriages, and deaths. A very old division of the English counties is that into **Hundreds**. The origin of this division is unknown, but the division is still maintained for one purpose. The members of each hundred are liable for damages done by rioters to the property of any owner within it.

Education under State supervision was till recently in a very backward condition in all the three countries, but it is now compulsory throughout Great Britain, though not yet in Ireland.

The management of education is left to districts, which elect School Boards for the purpose. The Act empowering the election of School Boards for England was passed in 1870, that for Scotland in 1872. At the date of the passing of the former the number of children in attendance at elementary schools inspected by Government inspectors was less than seventy out of every thousand of the population; thirteen years later that proportion had doubled, and the proportion is still rising. Both in England and Scotland there is still a deficiency of higher schools. In England there are five Universities, or bodies which have the right of conferring degrees, and usually provide for the most advanced education in special subjects. They are those of Oxford, Cambridge, London, Durham, and the Victoria University, the last of which has its head-quarters at Owens College, Manchester. In Scotland there are four: at St. Andrew's (the oldest), Aberdeen, Glasgow, and Edinburgh; in Ireland, two: Dublin University and the Queen's University, the latter of which has connected with it three colleges in different towns (Belfast, Cork, and Galway).

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[1] It was only, however, during the last eighteen years of its existence that this Parliament was supreme in Ireland. Previously the Irish Parliament, which represented only the English settlers, was subject to the crown or parliament of England.

The majority of the people in Great Britain are **Protestants**, and most of the **Roman Catholics** both in England and Scotland are of Irish origin. In each of these countries there is a Church recognised and partly supported by the State—that of England being Episcopal, that of Scotland Presbyterian in its form of government. In Ireland the people are chiefly Roman Catholics, except in the province of Ulster, in the north-east.

The **British Empire**[1] is composed of the British Isles and a large number of colonies and dependencies scattered over the globe.

The more important colonies have all Parliaments of their own and are completely independent, except that they acknowledge the supremacy of the English Crown, the authority of which is represented by a governor, whose signature is required for all laws passed by the colonial parliaments. Some of the others are governed by officers appointed directly by the Crown, and are hence known as **Crown Colonies**. British India is a dependency of the Crown with a peculiar form of government. The following table contains the names of the principal parts of the British Empire, with other particulars regarding them:

Name	Area in thousands of sq. miles	Ratio to Gt. Britain	Population in Millions (1881)	Date of Acquisition
British Isles	122	—	35	—
British India:—				
Under direct British rule	930[2]	$10\frac{1}{3}$[2]	200	1625–1886
Native States	510	$5\frac{3}{4}$	55	
Ceylon	25	$\frac{1}{3}$	2·76	1796
Cape Colony and its Dependencies in South Africa	230	$2\frac{1}{2}$	1·2	1806–84
Natal	19	$\frac{1}{5}$	0 4	1843
South African Protectorate, &c.	160	$1\frac{2}{3}$	—	1871–85
Dominion of Canada	3,470	39	4·3	1623–1760
Newfoundland	43	$\frac{1}{2}$	0·18	1583
West Indies and Bermudas	13	$\frac{1}{7}$	1·2	1605–1803
British Honduras	$7\frac{1}{2}$	$\frac{1}{12}$	0·03	1670
British Guiana	85	1	0·25	1803
Australia	2,945	33	2·6	1787
New Zealand	104	$1\frac{1}{6}$	0·5	1841
Tasmania	26	$\frac{3}{10}$	0·1	1803

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[1] This is only a popular designation. By law the Queen bears the title of Empress only in relation to her Indian dominions.

[2] Including Burma.

Among the smaller possessions of the British Crown, or territories now occupied by the British, are: **in Europe**, besides the Channel Islands, which are reckoned as belonging to the British Isles, the islands of Heligoland, Malta and Gozo, and the Rock of Gibraltar; **in Asia**, the island of Cyprus (under British administration since 1878), Aden in the south-west of Arabia and various islands off the coast of the same peninsula, the island of Labuan off the north-west of Borneo, and that of Port Hamilton off the south point of the peninsula of Korea; **in Africa**, various points on the west coast, and the three small islands of Ascension, St. Helena, and Tristan da Cunha in the Atlantic; **in Australasia and Polynesia**, the south coast of New Guinea east of 141° E. (placed under British protection in 1885), the Fiji Islands (annexed in 1874), and various other small islands; in America, the Falkland Islands, including S. Georgia. The total area of the British empire, the largest in the world, is about 8½ millions of square miles, and the population upwards of 300 millions.

ENGLAND.

England, with Wales, embraces rather more than two-thirds of the island of Great Britain, and forms an irregular triangle, the apex of which is in the north. The boundary separating it from Scotland is an irregular line running in a general southwesterly direction from the mouth of the Tweed to the Solway Firth. On the whole England is **mountainous or hilly in the west and north**, where the older rocks[1] are found, and consists of **plains, gentle hills, and undulating ground in the south-eastern half**, where all the rocks are of a geologically recent date.[2] The **main water parting** is for the most part nearer the west than the east coast, and retires farther from the east coast towards the south.

The **coast line** beginning in the north-east is at first very varied in character, but afterwards generally high and rocky as far as the bold promontory of **Flamborough Head**, in Yorkshire. On this part of the coast are numerous minute indentations, but the principal seaports are at the mouths of the rivers.

At the mouth of the Tweed is the small town of **Berwick**, long a bone of contention between England and Scotland, and now the only town belonging to England situated north of the river on which it stands. **Alnmouth** (Northumberland), at the mouth of the Aln, is of no importance except as a watering-place; **Blyth** (Northumberland), at the mouth of the river of the same name, has brisker shipping, but no great seaports are met with till we reach the **estuary of the Tyne**, between the counties of Northumberland and Durham. This estuary forms the chief outlet of one of the richest of the English coal-fields, and a constant stream of coal-laden steamers issues from it and proceeds along the east coast to London and other ports. Hence **NEWCASTLE** (Northumberland), and the adjoining **Gateshead**, on the Durham side of the river, which is kept open thus far up by dredging for vessels of large size, have become large commercial towns, and **Jarrow** (Durham), lower down, and **North and South Shields**, at the mouth of the estuary, are also busy seaports; Jarrow also has large ship-building yards. These are generally known as the Tyne ports, and in the export of coal they are rivalled only by Cardiff. **SUNDERLAND** (Durham), at the mouth of the Wear, is another outlet for the same coal-field, and also a seat of ship-building. Farther south, the shelter of a small peninsula a little to the north of the **estuary of the Tees** forms a natural harbour round which has grown up the town of **Hartlepool** (Durham), with a trade in coal, in iron wares, and in sail-cloth, which is manufactured there. At the head of the estuary of the Tees is **Stockton-on-Tees** (chiefly in Durham), a seaport, now completely eclipsed by **Middlesbrough**, lower down on the Yorkshire side of the estuary—a town which has since 1840 grown up from a tiny village into a busy seaport and manufacturing centre, chiefly in consequence of the discovery of immense deposits of iron ore in the surrounding district (Cleveland). Iron-smelting, steel-making,[1] the manufacture of rails and other articles in iron and steel, and iron ship-building are consequently the leading industries of the town. Sailing farther south along the Yorkshire coast, one next passes in succession **Whitby**, at the mouth of the Esk, a great sea-fishing centre, and now also a frequented watering-place, and **Scarborough**, one of the oldest, most picturesque, gayest, and most frequented watering-places of England.

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[1] See Introd. p. 34 top.

[2] It must not be inferred that this contrast as regards the surface usually holds good between regions of old and those of recent date geologically. The highest mountain ranges in the world are in fact comparatively recent in a geological sense.

Flamborough Head forms the termination of a line of chalk cliffs, and is followed by the low flat peninsula of **Holderness**, which is entirely composed of clay of quite recent geological date. Its inner boundary is marked by a curved line, convex towards the land, stretching from Flamborough Head to the middle of the estuary of the Humber. The sea border of this flat forms a line of low cliffs, without indentations and without harbours, constantly being worn away by the action ot the sea; and **Spurn**

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[1] Middlesbrough is an interesting illustration of the effect of inventions on the development of towns, for the making of steel has been only recently introduced there through the discovery of a method of making steel out of the ore which is found in the neighbourhood, but which is not suited for steel-making by previously known processes. Steel is iron containing a small but definite proportion of a substance called carbon.

Head, which forms its termination, is a low spit to which currents from the north are ever bringing new additions, while the currents of the Humber are always carrying material away from it, so that its position is maintained by the ceaseless play of opposing forces.

The **estuary of the Humber** forms the lower course of two of the greatest rivers of England, the **Ouse** from the north and the **Trent** from the south, and both of these bring down large quantities of fine mud, which is partly deposited on the sides of the estuary itself, partly washed southwards by the prevailing currents along the coast of Lincoln. This coast is accordingly everywhere low and flat, and has no seaports worthy of mention except on the estuary itself.

The most inland seaport in this quarter is **Goole** (Yorkshire, West Riding), which is situated a little above the entry of the Trent, where the Don or Dun[1] joins the Ouse by an artificial cutting known as the Dutch Canal.[2] Lower down, on the north side of the Humber, stands **HULL** or **Kingston-upon-Hull** (Yorkshire, East Riding), a seaport with a more valuable Continental trade than any other on the east coast except London. **Great Grimsby**, nearer the mouth on the Lincolnshire side, has grown into importance through its Continental trade since the introduction of railways.[3]

The low flat coasts which we first meet with in Lincolnshire are continued all round the Wash, a gulf so shallow as to render the navigation difficult even for such small vessels as can reach the seaports of **Boston**,[4] on the Witham, in the south of Lincolnshire, and **King's Lynn**, near the mouth of the Great Ouse in Norfolk.

Cliffs, marking the termination of a band of chalk uplands running from the south, are resumed at **Hunstanton Point**, in the north of Norfolk.

On these Norfolk cliffs **Cromer**, now a rising watering-place, occupies one of the most exposed situations on the eastern coast, where the sea is constantly gaining on the land, and where a considerable area has been washed away within historical times.

The coast gets lower as we go southwards, and on the deeply indented shores of Suffolk and Essex consists of low mud-flats, which stretch farther and farther inland the farther south we go.

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[1] Locally, this river is always called Dun.

[2] Because constructed by a Dutch engineer (Vermuyden).

[3] See note, p. 60.

[4] Compare, however, Lincoln, p. 109.

The principal towns on this part of the coast are at or near the mouths of the small streams which here enter the sea independently in considerable number. **Yarmouth** (Norfolk), at the mouth of the Yare, is the principal seat of the herring fishery on the English coast. Within the sandbanks which lie off the coast at this point is an excellent roadstead, where ships may ride at anchor in safety during the stormiest weather. **Lowestoft** (Suffolk), at the mouth of the Waveney, is chiefly noted as a watering-place. **Ipswich** (Suffolk), at the head of the estuary of the Orwell; **Harwich** (Essex), at the extremity of the estuary of the Stour—a steam-packet station; and **Colchester** (Essex), near the mouth of the Colne, follow as we pursue the coast-line southwards.

Next comes the great estuary of the Thames, the largest river in England, on which **LONDON**,[1] at the head of ocean navigation, has grown to be the largest town and greatest seaport in the world.

It was founded probably in Roman times, when marshes and forests in unbroken succession formed the shores of the estuary, and the site chosen seems to have been the first spot where a landing could be made and strong defences erected.

Below London the Essex or northern shore of the estuary is in general too marshy to allow of towns being built on it; but on the firmer Kent shore there have sprung up many other towns, which derive importance from their situation.

Greenwich, with the Royal Observatory, through which the first meridian is drawn, a town now embraced within the limits of the larger London; **Woolwich**, the chief naval arsenal of Britain; **Gravesend**, the termination of the port of London; **Rochester**, the seat of an ancient bishopric, and now continuous with **Strood**; **Chatham**, a fortified town, with Government dockyards and other naval and military establishments (all the last three towns are situated round the head of the minor estuary of the Medway); **Sheerness**, another fortified town, with government establishments, situated on the Isle of Sheppey. The part of the estuary immediately below Sheerness (about fifty miles below London Bridge) is known as **The Nore**, beyond which the estuary begins to widen out greatly. Near the extremity of the north coast of Kent is **Margate**, a favourite watering-place.

South of the estuary of the Thames begins the line of chalk cliffs which are so conspicuous a feature on arriving from the Continent. They form the termination of a line of hills, the North Downs, which run from east to west along the south of the Thames, and their most advanced points form the two headlands known as the **North** and **South Foreland**.

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[1] See also p. 107.

Opposite the bay between these two capes, within the shelter of the **Goodwin Sands**, is the **Downs Roadstead**, which, like that of Yarmouth, affords a safe anchorage.

The South Downs, another line of chalk hills having the same general direction as the North Downs, run out to sea at **Beachy Head**, on the Sussex coast; while **Dungeness**, the cape intervening between the latter promontory and the South Foreland, is a low clay spit, the position of which is maintained, like that of Spurn Head, by opposing currents. It forms the end of **Romney Marsh**, a marshy tract upwards of 40,000 acres in extent, which has been partly won from the sea and has to be protected against the sea by artificial embankments.

The towns on this part of the coast were mostly of greater importance in the early period of British history than they are now. The **Cinque Ports**, originally, as the name indicates, five in number—namely, **Sandwich, Dover, Hythe, Romney**, and **Hastings**, afterwards made seven by the addition of **Winchelsea** and **Rye**[1]—were all at one time busy seaports, but all with the exception of Dover have declined in this respect, partly through changes in the coast-line, partly through the increase in the size of ships employed in commerce. Deposits brought by currents advancing up the English Channel have silted up most of the old harbours, and have even added so much to the coast-line that all the towns mentioned except Dover and Hastings are now inland; and the increase in the size of ships, demanding deeper harbours than can be found on this coast, has prevented the growth of new seaports of the same importance as the old ones. **Dover**, situated in a breach or notch in the chalk cliffs immediately to the south of the South Foreland, is the only one of the number that has grown in consequence from being the starting-point of the shortest sea-route to the Continent. **Hastings**[2] is still flourishing, but only as a watering-place and health resort, and the new towns of **Eastbourne** (west of Hastings) and **Ramsgate** (near the North Foreland), owe their prosperity to the same cause. **Folkestone**, in Kent, a little to the south-west of Dover, has the same kind of traffic as the latter port, and is also a much-frequented watering-place. **Deal**, about the same distance to the north-east of Dover, is celebrated as the supposed landing-place of Julius Cæsar.

West of Beachy Head the chalk cliffs of the Downs still continue for a time to approach the Sussex coast.

Under their shelter lie **Newhaven**, another crossing-place to the Continent, situated where the Ouse makes a breach through the Downs, and **BRIGHTON**, a town of quite modern origin, but now, owing to its fine beach and the ease with which it can be reached from London, the largest watering-place in England.

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[1] The last three in Sussex; the others in Kent.

[2] Near Hastings is the scene of the battle in which William the Conqueror defeated Harold II.

Farther west low coasts prevail, but the indentations in Hampshire form some of the finest natural harbours of the whole English seaboard.

Opposite the Isle of Wight, on the north-east side of the channel of **Spithead**, which forms an unsurpassed anchorage, entrance is obtained to the vast harbour of **Portsmouth** by an opening little more than 400 yards wide, but deep enough to admit the largest vessels at any state of the tide. These advantages marked it out for a naval station, and since the time of Henry VIII. the town of **PORTSMOUTH** (with the adjoining town of **Portsea**[1]) has grown in importance as a naval station and seat of both naval and military establishments. The fortifications and government dockyards are of great size and interest. **Gosport**, opposite Portsmouth, is likewise fortified and furnished with government establishments. The inlet known as Southampton Water, which forms a continuation of the channel of Spithead, leads up to **Southampton**, the principal commercial port on the south coast, occupying a small peninsula between the mouths of the two small Hampshire rivers, the Itchin and Test.

The western channel, separating the **Isle of Wight** from Hampshire, is called the Solent, and is celebrated as a resort of yachts; **Cowes**, at the north angle of the island, being the head-quarters of the Royal Yacht Club. The island generally is noted for its mild climate, which causes its towns, **Ryde**, **Ventnor**, and others, to be much frequented as watering-places and health resorts. Its **coasts** are cliffy in the south, where chalk reappears, and in the west these chalk cliffs run out to a narrow promontory succeeded by isolated rocks or stacks known as the **Needles**.

Poole and **Weymouth**, on the coast of Dorset, are both small ports, whose harbours lie under the shelter of remarkable promontories. That of Poole is partly enclosed by the peninsula of the **Isle of Purbeck**, where, after a long stretch of clay, chalk once more reappears along with a limestone of older date, which affords a valuable building stone and in some places takes the form of marble. Similar limestones also used for building form the **Bill of Portland**, which is connected with the land by a low ridge of shingle known as the **Chesil Bank**. Under its shelter lies Weymouth. Near Poole, the favourite health resort of **Bournemouth**, in Hampshire, has recently sprung up.

The rocks that we now meet with are older and older as we go westwards, and the sea-coast becomes rocky and precipitous. Here and there, however, are sheltered bays with some indentations running farther up into the land and forming excellent harbours.

The first important indentation is formed by the estuary of the Exe in Devonshire, which, though shallow and muddy, is navigable to its head, and the ancient cathedral city of **Exeter**, on the river Exe, is maintained as a seaport by means of a ship canal communicating with it.

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[1] Now included in the Parliamentary borough of Portsmouth.

In the large bay between the two bold promontories of **Portland Bill** and **Start Point** (Devon) is situated the smaller **Torbay**, where the town of **Torquay**, under the shelter of cliffs which ward off the cold north-east winds, has long been noted as a resort for invalids, and a little farther to the south the estuary of the Dart is occupied by the town of **Dartmouth**, a seaport of no little consequence in earlier times, though now decayed.

The wide bay that follows between **Start Point** and **Lizard Point** (Cornwall) contains two admirable natural harbours—one at the mouth of the Tamar, between Devon and Cornwall, and the other near the south of the latter county.

The first of these two harbours is the beautiful **Plymouth Sound**, which runs inland with numerous curves, and, being capable of accommodating the whole British fleet, is employed as a naval station. On its Devonshire shore lie the contiguous towns of **Plymouth**, **Stonehouse**,[1] and **Devonport**, the last strongly fortified, and furnished with large naval and military establishments, including vast docks.

The Sound is protected against storms from the south by a massive breakwater nearly a mile in length, and forts and batteries guard all the approaches to the towns against foreign aggressors. Fourteen miles south of the breakwater the celebrated **Eddystone Lighthouse** rises above a dangerous rock.

The second of the two natural harbours in this part of the coast is Falmouth Bay, with numerous creeks, on two of which stand the seaports of **Truro** and **Falmouth**, the latter still the seat of considerable commerce, although no longer a mail-packet station, as it was for a century and a half.

Of the two bold headlands at the extremities of Cornwall, one, **Lizard Point**, marks the most southerly, the other, **Land's End**, the most westerly point of England. They both consist of rocks of extreme hardness (Land's End of granite), and thus have allowed the sea to eat out a small bay in the softer rocks that intervene. This bay, as well as the southern part of the west coast of Cornwall, is noted for its **pilchard fisheries**.

The west coast of England is in the south equally rocky and precipitous with that part of the coast which was last considered; but the upper part of the **Bristol Channel**, and the whole of the estuary of the Severn, have flat shores bordered by sandbanks, and sandbanks also choke the higher reaches of the estuary and prevent the ascent of large vessels. At the mouth of the river the tide rushes upwards in the form of a **bore**, sometimes at the rate of fourteen miles an hour. The Channel is nevertheless an important highway of commerce, and leads to three seaports worthy of note.

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[1] Stonehouse is included in the Parliamentary borough of Devonport. The united population of the three towns in 1881 was 140,000.

The oldest and chief of these is **BRISTOL** (Gloucestershire; 250[1]), not upon the Severn itself, but six miles up the Avon, which flows into the estuary from the east, separating during part of its course the counties of Somerset and Gloucester. Built on a height well adapted for defence,[2] the town was a stronghold of importance even in the time of the Romans, and in later times it became the chief seat of trade with the Mediterranean, and, after the establishment of colonies in America, with that continent and the West Indies. Even at the present day its trade is chiefly with America, though it has long been outstripped in this trade by Liverpool, which has a foreign commerce more than ten times as great. The other two chief Severn ports are on the north side, **Cardiff** and **Swansea**, both of quite modern growth and deriving their importance from lying near the borders of the great coal-field of South Wales. They hence serve as places of export for the products of Welsh mining industry. Both towns export large quantities of coal; in addition to which Cardiff smelts and exports much iron, while **Swansea** is the principal seat of **copper-smelting** in the world, the coal obtained in the neighbourhood being peculiarly well adapted for the purpose. **Weston-super-Mare**, on the Somerset side of the estuary, has recently risen into favour as a watering-place.

The west coast of Wales, which is everywhere rocky and precipitous, is wholly wanting in great seaports, for **Milford Haven**, though forming an excellent natural harbour, is too remote from the great seats of industry.[3] The Welsh coal-field does indeed extend into this county, but the soft beds which have been eaten out between hard igneous rocks at the sides to form **St. Bride's Bay** are little suited for working.

The wide sweep of **Cardigan Bay**, which indents the greater part of the west coast of Wales, is terminated by a peninsula presenting a close resemblance to that of Cornwall. The southern headland of this peninsula forms the termination of a line of hills which runs through the whole county, reaching its highest point in Snowdon, the loftiest mountain in South Britain, and descending abruptly into the sea again at the lofty promontory of **Great Orme's Head.** The western part of the county is lower, and is separated from the low island of Anglesey by the **Menai Strait,** which is narrow enough to be crossed by bridges.

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[1] The populations are those of the Parliamentary boroughs within the boundaries fixed by the Redistribution of Seats Act, 1885.

[2] See Introd. p 61 (4).

[3] There is a government dockyard here.

Besides a fine suspension bridge, there is a tubular railway bridge for the railway to **Holyhead,** whence there is the shortest passage to Dublin. On the strait are the two small towns of **Carnarvon** and **Bangor,** the latter the seat of a college.

At Great Orme's Head the coast of North Wales sinks, and the coast line remains for the most part low and sandy or clayey as far as Cumberland. On the Welsh part of this coast the towns are mostly watering-places with fine beaches, the chief being **Llandudno** (Carnarvonshire), at the foot of Great Orme's Head. In the next part of the coast are three estuaries of importance which have had an interesting history. Two of these, the estuary of the **Dee** and the estuary of the **Mersey,** lie on the two sides of the flat peninsula in the north-west of Cheshire; the third is that of the **Ribble,** in the middle of Lancashire.

In Roman times the estuaries of the Dee and Ribble, which are now of little consequence commercially, contained the chief seaports in this part of Britain; while that of the Mersey, which is now of hardly less importance to shipping than the Thames, does not appear to have been used at all. **Chester,** the *Devana Castra*[1] of the Romans, at the head of the estuary of the Dee, became at an early date one of the leading towns of the west, several circumstances combining to favour its rise. The Dee, now, through the silting up of its estuary, navigable only for vessels of small burden, was in ancient times much more suited for shipping; the plain round Chester is rich and fertile, and was early fitted for settlement; and a sandstone rock rising above this plain afforded an easily-defended site for the town. Chester, now a quiet cathedral city, still preserves the entire circuit of its old walls, being the only town in England which does so. Ribchester, or Ribblechester, was one of the Roman seaports on the Ribble, the mouth of which is now also to a large extent silted up; but at the present day **Preston,** lower down, is the chief town on the estuary of this river, and is more important for its cotton manufactures than its shipping. **Southport,** at the mouth of the estuary, on the south side, is a watering-place frequented for the mildness of its climate. Though the narrow mouth of the estuary of the Mersey is encumbered by sandbanks, which do not admit of the entrance of large vessels at low tide, the wide basin within is large enough and deep enough to accommodate whole fleets of the largest ships; nevertheless, its importance to shipping dates only from quite recent times. In the Roman period, South-west Lancashire appears to have consisted chiefly of forests and marshes; Wirral, the Cheshire peninsula on the opposite side of the

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[1] See p. 100.

Mersey, is said to have been an uninhabited forest till long after the time of the Romans,[1] and **LIVERPOOL**[2] (600), on the Lancashire side of the estuary, was founded only about the end of the twelfth century (by King John) for the sake of maintaining communications with the English settlements made shortly before in the east of Ireland. Two hundred years ago it was still a small town, and not till the opening of the great coal-field of South Lancashire, and the rise of the cotton manufacture round Manchester, was it able to spend the sums necessary for the construction of docks to accommodate the increasing shipping; and not until then did it begin to outstrip Bristol in its commerce. Now it is the second in population among the towns of England; and the port, which includes Birkenhead, on the Cheshire side of the Mersey, is second to London alone among the seaports of the world, and even surpasses London in the value of its exports. The six or seven miles of continuous docks belonging to Liverpool alone present a sight unparalleled elsewhere. Importing chiefly raw cotton and grain from America, it exports manufactured goods to all parts of the world. **Birkenhead**, which in 1881 had a population of upwards of 80,000, has grown up from a small village within the last sixty years. It is now connected with Liverpool by a railway under the Mersey. The Mersey is navigable for vessels of moderate size to **Warrington**,[3] a cotton manufacturing town on the borders of Lancashire and Cheshire, situated at the point where the Roman road from Chester to Ribchester crossed the Mersey.

Farther north the shallow and sandy **Morecambe Bay**, which runs up to Westmorland, dividing Lancashire into two sections, is of little importance to shipping, but on it are three coast towns of some size.

Fleetwood, at the mouth of the Wyre, carries on a considerable trade with Belfast; **Lancaster**, at the head of the estuary of the Lune, is worthy of mention chiefly on account of its antiquity and former importance; while **Barrow**, at the northern entrance of the bay, opposite the island of the same name, is, on the contrary, a place remarkable for the rapidity of its rise—in this respect the rival of Middlesbrough. In the middle of the present century a small fishing village, it has suddenly swelled into a great seat of industry and commerce, owing to the existence in its vicinity of vast deposits of a kind of iron ore, peculiarly well suited for the making of steel[4] by modern processes. On the straight line of coast between the estuary of the Ribble and Morecambe

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[1] It was disforested by Edward III. (fourteenth century).

[2] The termination *-pool* indicates that a pool at one time existed adjacent to the site, and the fact that no mention is made by the Romans of the estuary of the Mersey has led to the suggestion that in ancient times the estuary did not exist, but was only a pool drained by a shallow outlet.

[3] It was made navigable so far only in 1694, and if the Mersey was not navigable at this point in the time of the Romans, this would help to account for this river not being made use of for commerce even if the estuary existed.

[4] Red hæmatite (Gr. *hæma*, blood, from its colour), an ore very rich in iron.

Bay is the watering-place of **Blackpool**, much frequented in summer and autumn by the people of Lancashire and Yorkshire.

From Barrow the coast-line trends in the main outwards as far as **St. Bees Head**, where rocks of old geological date again stand out in a bold promontory.

Beyond St. Bees Head three coast towns, **Whitehaven, Workington, and Maryport** (all in Cumberland) are passed in succession.

They all derive their importance from a coal-field, (some of the workings of which extend at Whitehaven under the sea), together with deposits of the same iron ore as is found at Barrow.

The north coast of Cumberland, where it borders the shallow **Solway Firth**, remarkable for its swiftly advancing and retreating tides, is low and flat, and has no towns of any importance.

Carlisle (Cumberland) may, however, be mentioned as a seaport belonging to this estuary, since the point on the Eden where it stands can be reached by small sea-going ships; but the town is of much more importance as the centre of a fertile plain, the natural meeting-place of roads, and now also of railways across the hills from the north, south, and east. It is the point of union of several English and Scottish lines of railway.

Surface.—What chiefly distinguishes the **surface** of England is its very varied character. There are no proper mountain ranges, few plains of any size, but a constant succession of hills, rolling ground, and valleys. As already stated, the highlands are chiefly in the west and north, and the boundary between them and the more lowland area of the south-east is roughly indicated by the course of the Tees, Ouse, Trent, Lower Severn, and Exe, but there is a broad wedge of lowlands thrown in between the mountains of Wales and the highlands of the north. The chief plain is a winding series of valleys traversed by the Tees, Ouse, Trent, Mersey, and Dee. Almost the only extensive tract where the surface sinks to a nearly dead level is that along the south and south-west of the Wash and the east coast of Lincoln, where the present outline of the land is due to river and sea deposits of quite recent geological date.

In describing the physical features in greater detail we begin in the north. The **boundary between England and Scotland** is marked in its middle portion for a distance of about thirty-five miles by a line of rounded hills, called the **Cheviot Hills**, extending from north-east to south-west along the frontier of Northumberland. Grassy to the top and almost everywhere these gently sloping hills, which have few heights above 2,000 feet, are specially suited for sheep pastures, and on them is reared an excellent breed of sheep, hence called Cheviots.

Though so low and gentle in their rise, the fact that they are crossed by only one high-road shows how well they are fitted to form a boundary. The road in question is that which proceeds from Newcastle and diverges at the top of the pass in two directions—to Jedburgh and Hawick, in Scotland. A railway has been laid across a lower part of the range to the south-west, but in Scotland it has to cross one of the spurs of the range at a higher elevation than the principal pass.

To the north-east of the Cheviots the English boundary advances northwards as far as the **Tweed**, on both sides of which the ground is low (under 500 feet), but full of swellings and hollows. The Tweed ceases to be the boundary a little above the town of Berwick. To the south-west the frontier territory is a stretch of perfectly flat land, along which the boundary line is purely arbitrary, although in former times the district was well fitted to divide two nations, inasmuch as it was a scarcely passable morass (**Solway Moss**).

On the English side of the Cheviots sheep uplands stretch a long way to the south, leaving lower ground everywhere in the east of Northumberland. These uplands end in a narrow depression, which runs right across the country from east to west, between the valley of the Tyne and that of the Eden, along the lower course of which it spreads out into a broad and fertile vale, with **Carlisle** in the centre. This depression is that along which the so-called **Picts' Wall**, more properly the **Rampart of Hadrian**, was built in Roman times, and which is still marked out by the windings of the railway between Newcastle and Carlisle.

Immediately to the south of the narrowest part of this depression begins another notable range of highlands. This is the **Pennine Chain**, which runs from north to south, and extends, if we apply the name in its widest sense, to the middle of Derbyshire and north of Staffordshire. Sometimes the name is confined to the more northerly portion. The character of this range ought to be very carefully borne in mind on account of its importance with reference to the physical features, the geology, and the distribution of an important part of the mineral wealth of England. (1) As to the physical features, it should be remembered that this is not a range of mountains, but a series of elevated uplands in most places above 1,000 feet in height. Seen from the railway which traverses its northern part, it presents to view on either hand broad stretches of moorland or sheep pastures broken in upon at intervals by deep and narrow lovely dells devoted to agriculture. Midway it is interrupted by a partial depression, the level sinking below 500 feet between the Ribble on the west and the Wharfe on the east. Southwards the range terminates in a number of finger-like spurs, between which flow several tributaries of the Trent. On the chief of these spurs is the **High Peak**, about 2,000 feet in height, or nearly 1,000 feet less than the hightest summit in the north (**Cross Fell**).

(2) Geologically this range is important because it marks a line along which the strata[1] have been raised high in the air and thus made to slope down on either side towards the sea. Since this took place many of the upper rocks have been worn away, and the central part of the range has been worn down to very old rocks indeed. These are mainly the rocks that lie next below those which yield coal most abundantly, and the so-called **coal measures** are still found over a great extent of surface at four places on either side of the range. Learn coarse [illegible]

sm[illegible]

(1) There is on both sides of the **Tyne** a large coal-field, which is believed to run out for about fifteen or twenty miles under the sea. On the opposite side there is (2) the smaller coal-field which runs under the sea at **Whitehaven.** Then in the south there is (3) on the west side what may be called the group of the great **cotton coal-fields** of South Lancashire and East Cheshire, the coal-fields which supply the fuel for the numerous cotton factories of the towns round Manchester;[2] and on the east side (4) the great **woollen coal-field** of the West Riding of Yorkshire, supporting the woollen factories of Leeds[3] and the large towns in the neighbourhood; but this coal-field is continuous with others extending through Derbyshire to Derby and Nottingham, great seats of hosiery manufactures. (5) Finally, to the south of the range lie the **coal-fields of Central England**—one in Leicestershire, where hosiery manufactures are carried on, and another, with Birmingham for its centre,[4] of much more importance, on the borders of the counties of Stafford, Warwick, and Worcester, a region also rich in iron, and hence covered with blast furnaces, ironworks of all kinds, and other signs of a great manufacturing industry, a region which has well earned the name of the **Black Country**, from having its surface grimy with soot and coal-dust and its atmosphere darkened with smoke. To the same group belongs another coal-field in the north of Staffordshire, in the district known as the **Potteries**, from the fact of the manufacture of earthenware being extensively carried on there.[5]

[1] See Introd. p. 34. [2] See p. 111. [3] See p. 111. [4] See p. 112. [5] See p. 112.

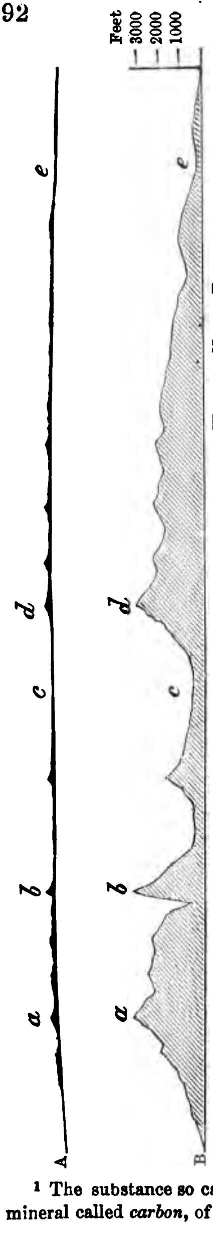

FIG. 17.—SECTION ACROSS THE NORTH OF ENGLAND FROM SOUTH-WEST TO NORTH-EAST.
A, on the same vertical and horizontal scale, and showing the true curvature of the earth. B, vertical scale ten times the horizontal.
a, Scawfell; b, Helvellyn; c, Valley of the Eden; d, Crossfell; e, Valley of the Tyne.

To the west of the northern end of the Pennine Chain there is another highland and even mountainous region, which must be regarded as independent. It forms indeed a complete contrast to the former. The area occupied by it extends over parts of Cumberland, Westmorland, and Lancashire, and seems to have been originally raised up in the form of a dome with the highest part in the middle. Now it is furrowed by deep valleys which run out in all directions, and many of which are occupied by beautiful lakes (**Windermere, Ulleswater, Coniston,** &c., **Keswick Lake** or **Derwentwater**). The region is therefore known by the name of the **Lake District.** Windermere, the largest lake in England, is eleven miles long by about one mile wide. The mountains are the highest in England, several peaks (**Scawfell, Helvellyn, Skiddaw**) rising to more than 3,000 feet in height. Trees are abundant, and the attractions of the scenery draw to the district every year thousands of tourists, and make it a favourite home of artists and poets. The sources of wealth in the district are inconsiderable. There is naturally but little agriculture, and except on the borders of the district, where lie the iron deposits round Barrow, and the coal and iron of Whitehaven and the neighbourhood, the only mineral of importance is **graphite** (so-called black-lead[1]), used in making lead pencils. The rocks of this district are still older than those of the Pennine Chain. In several places there are remains of volcanoes.

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[1] The substance so called is not allied to lead, but is one of the forms of the mineral called *carbon*, of which pure charcoal and the diamond are other forms.

The mountainous region of the Lake District is not wholly cut off from the Pennine Chain. There is a neck or saddle or connecting ridge stretching from the one to the other, but having a lower elevation than the highlands on either side. This saddle is called **Shap Fell**, and over it have long passed the chief roads from north to south in this part of England, either by Shap itself or by Appleby; and now two railways follow the same routes.

East and south of the Pennine Range is the series of plains already spoken of. In the north-east is the **Vale of Tees**, taking its name from the river which traverses it in its course to the German Ocean. There then follows the broad and fertile **Vale of York**, about 1,000 square miles in extent, running north and south through the middle of the county, a vale which formed one of the earliest seats of population in England, and hence possessing towns (York, Aldborough, &c.) which, though anciently famous, have long been eclipsed by others of more recent growth. The vale is traversed from north to south by the **Ouse** and the **Derwent**, and into it open the dales traversed by the **Swale, Ure, Nidd, Wharfe, Aire,** and **Dun** or **Don.**

The next in the series of plains is the **Great Central Plain**, or that which is traversed by the **Trent**, the second of the two great rivers which unite to form the estuary of the Humber. In the upper part of its semicircular course (where it skirts the base of the last spurs of the Pennine Chain), considerable tributaries flowing both from the north and south indicate the breadth of the low grounds (though the undulations of the surface almost everywhere exceed 250 feet in height); but in the northern part of its course the river advances close up to the south-east uplands, the edge of which here forms a water-parting. West of the sources of the Trent the plain turns northwards, forming the tract extending from the Mersey to the Upper Severn and traversed by the Dee and tributaries of the Mersey. Here the plain sinks lower, becoming in some places quite flat. On its southern borders in Shropshire rises the **Wrekin**, a solitary height composed of a mass of igneous rock.[1]

[1] That is, rock which solidified from a molten condition.

This whole series of plains is rich in natural resources. Everywhere it is well suited for corn growing or dairy farming. Minerals are also abundant. Parts of the great coal-fields of the flanks of the Pennine Chain extend into it both on the east and west, and to it also belong the coal-fields of Central England. In its westerly portion lies also the **salt**-yielding district of England, in a depression of Cheshire traversed by the **Weaver**, a tributary of the Mersey. **Nantwich**, **Middlewich**, and **Northwich** are the chief towns engaged in this production.

Beyond the central plain on the west lies the peninsula of **Wales**, the most mountainous region in South Britain. Mountains with narrow intervening valleys cover almost the whole area.

In the north their general trend is from south-west to north-east, but in the south the **Black Mountains** stretch from east to west, their loftiest summits, known as the **Brecknock Beacons**, succeeding one another in that direction along the south of the upper valley of the Usk. The mountains close up more compactly on the west than on the east. The valleys open out to the latter side, so that the chief rivers, the **Severn** and the **Wye**, though both rising near the coast, make wide sweeps to the east before they turn southwards to enter the Bristol Channel. Thickly clustered as the mountains are, there are numerous breaches between them, which has made it a comparatively easy matter to lay railways across the peninsula. The rocks composing the mountains are geologically as old as those of the Lake District, in some places older. **Snowdon**, the highest mountain in South Britain, and **Cader Idris**, another well-known summit in North Wales, are both the remnants of old volcanoes.

The structure of this part of the country adapts it better for **sheep pastures** than for cultivated crops; but many of the sheltered, well-wooded vales are as celebrated for their fertility and their beauty. Among these are the **Vale of Clwyd** in the north, and those of the **Towy**, **Usk**, and **Wye** in the south (the two latter chiefly in England).

Mineral wealth is pretty widely distributed. In the north, **slate** is quarried in some places, above all at **Penrhyn**, on the Menai Strait, in Carnarvonshire, on an immense scale. **Copper** is abundant in Anglesey. Small **coal-fields** exist in the north, in the counties of Flint and Denbigh, and in the latter, iron also is a mineral of importance. But the **great Welsh coal-field** is in the south, in Glamorganshire and the adjoining counties, where **iron** also is abundant. Here, consequently, and here only in Wales, population is dense, and here only are there towns with more than 50,000 inhabitants; and since the density is due solely to the working of the coal and iron, it dates only from the present century, when the coal-field was first opened.[1] Hence Glamorganshire has multiplied its population more rapidly than any other county in England and Wales. At the census of 1881 the number of its inhabitants was more than seven times as great as it was at the first census in 1801.

Between the mountains of Wales and the uplands of the south-east of England lie the valleys of the **Severn** and the **Wye**, the former the longest river in Great Britain next to the Thames. The broadest part of the Severn valley is in the north, where the river traverses the lowland agricultural counties of Salop and Worcester, and receives on its left bank the Upper Avon from the equally fine agricultural district of South Warwickshire. Towards the south, the valley narrows where the edge of the south-east uplands of England advances in the Cotswold Hills close up to the left bank of the river, while on the right bank stand the hills which divide its basin from that of the Wye.

Most of the towns of these valleys are quiet agricultural centres. The Severn valley, one of the warmest in England, still noted for its orchards, was at one time also largely planted with vineyards; but these were gradually abandoned, as the commerce with France furnished England with the better wines of that country.

On the Severn are Shrewsbury, Worcester, and Gloucester; on the Upper Avon, Rugby, Leamington, Warwick, and Stratford-upon-Avon; on the Wye, Hereford, Monmouth, and Chepstow. One or two of the manufacturing towns belonging to the coal-fields of central England are situated in the Severn basin; but the chief mineral wealth of this part of the country is found on each side of the estuary of the Severn, where there are small coal-fields (with iron ores), which once no doubt formed parts of the great coal-field of South Wales, but which have been separated through the ground being thrown into folds and the higher parts worn away.[2] The coal-field on the right or west bank of the estuary belongs to the **Forest of Dean**, a forest belonging to the Crown, and still kept up as a source of supply of timber for the Royal Navy. The iron ore of this district was among the earliest worked in Britain. More important are the **Bristol and Bath coal-fields** on the east side of the Severn, in the district traversed by the Lower Avon.

The **south-west peninsula**, composed of the counties of Somerset, Devon, and Cornwall, is the last part of England in which older rocks prevail, along with an irregular and for the most part unproductive surface. Bogs and thin hill pastures increase in extent as we advance to the south-west. The northernmost county, that of Somerset, is for the most part a lowland district suited for dairy farming, and along the **Axe**, and **Brue**, and at the mouth of the **Parret**, in the middle of the county, is a considerable stretch of flat land of quite recent formation. In the north of the county the **Mendip Hills**, a small strip of limestone with large caves,[1] and with veins of lead, copper, and other metals, stand out above the rest of the surface, which has been worn away more quickly.

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[1] See p. 86.

[2] See Introd. p. 34, and comp. p. 82.

West of the Parret again the surface becomes rough and hilly, and this region merges in the north of Devon in the hills and valleys of what is still called **Exmoor Forest**, although the forest is gone and only the moorland remains. Farther south rich pasture lands follow until we come, in the south of Devon, to the craggy granite tableland of **Dartmoor**, which is occupied by a convict station, and which, though covered with a barren soil, is rich in other respects, having many mines of **tin, copper,** lead and iron round it. Were it not for the same kind of wealth, the heaths and moorlands of Cornwall would support even a scantier population than is actually found in that county, but the veins of **tin,**[2] **copper, zinc** and lead have been the support of a mining industry from a remote period, the tin mines having caused this coast to be visited by Phœnician traders many centuries before the Christian era. From the granite rocks forming the **Scilly Islands** off the south-west coast the tin is said to have been sometimes shipped, and hence this group got the name of **Cassiterides** or **Tin Islands.**

The **south-east of England**, which presents so many points of contrast to the north and west, comprises the region to the south of the valley of the Tees and the east of the plains and highlands already described. As already stated, this region is composed on the whole of newer rocks than those of the rest of the country, and the most striking features in it arise from the way in which its older and newer rocks are disposed. The geological strata are not so crumpled and folded as they are in the west, but are spread out in vast flat sheets, the older of which generally extend farther west than those of more recent date; and the chief contrasts of upland and plain or valley are seen at the edges of successive strata. Hence such names as **Wotton[1] under-Edge** and **Edgehill.** Though there are contrasts of upland and plain, there are few places in which the surface rises more than 500 feet above sea-level, and there is not a single elevation of 1,500 feet. In the whole region there are few large manufacturing towns and no mining towns of importance. The people are more largely employed in agriculture than in the west, and though the population is not on the whole more dense, it is more evenly distributed, except round London.

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[1] See Introd. p. 29.

[2] The tin mines or *stannaries* (Lat. *stannum*, tin) of Devon and Cornwall are under a separate administration, the head of which is called the Warden of the Stannaries. Those engaged in tin-mining have the right to sue and be sued in special courts. The tin mines were the source of the enormous wealth of Richard of Cornwall, brother of Henry III. of England, and for a time nominal Emperor of Germany. From the time of the Black Prince, son of Edward III., the Princes of Wales have borne the title of Duke of Cornwall, and till the present reign they had the right of levying certain duties on tin.

The nature of the surface will be best understood by following the course of the rocks whose edges or escarpments form so marked a feature in the landscape. First there is a strip of **oolitic rocks**, whose edge forms the very irregular boundary of this region on the west. The term oolitic[2] is applied to them because they are chiefly composed of a kind of limestone, the particles of which are round grains like the eggs in the roe of a fish. This strip begins in the south-west on the borders of Dorset and Devonshire, and proceeds thence with many windings more or less northwards. In Gloucestershire it turns more to the north-east, and there its edge attains its greatest elevation above the plain so as to form the **Cotswold Hills**, under the shelter of which lies Wotton-under-Edge. Thence it proceeds still more eastwards, following the direction indicated by the course of the Upper Avon, and in this part is the escarpment of **Edgehill**, on the borders of Warwickshire and Oxfordshire. Taking now a more northerly direction, it sinks greatly in height, though its edge on the west is still more or less clearly marked out from the western plains. In Lincolnshire it forms the **Lincoln Heights or High Dyke**, in the west of the county. After crossing the Humber near its head, it almost disappears in the part of Yorkshire which lies to the south of the Derwent, but north of that river it spreads out again and rises in height to form the **Moors of the North Riding.** On these are the highest elevations in the north-east of England, and among the cliffs on their north in the district of Cleveland (Cliffland) is found the most important mineral wealth of the region now being described.[1]

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[1] That is, 'Wood-town.'

[2] Gr. *ōon*, an egg; *lithos*, a stone.

After the oolitic rocks there next follows a series of **chalk rocks**, which also begin on the coast of Dorset, and one branch of which proceeds on the whole north-eastwards to **Hunstanton Point**, the north-west extremity of Norfolk. It is cut through by the Thames, immediately to the north of which the **Chiltern Hills** (in Oxfordshire and Buckinghamshire), running nearly parallel to the Cotswolds, form its most conspicuous escarpments. The chalk strip is much broader than the oolitic, and in the north spreads out over nearly the whole of Norfolk (between the Ouse and the sea) and a great part of Suffolk. In these two counties it sinks in elevation, though its edge is still recognisable as the **East Anglian Heights.**

Hunstanton Point is not, however, the final termination of this branch of the chalk. On the other side of the Wash it is continued in the **Lincoln Wolds**, in the east of Lincolnshire, and it then crosses the Humber to form the high and bleak **York Wolds**, between the flat of Holderness and the valleys of the Ouse and Derwent. The upper part of the latter valley, known as the **Vale of Pickering**, is a fertile hollow between the chalk wolds in the south and the oolitic moors in the north.

South of the Thames other two branches of the chalk run east and west, all the three branches meeting in the thinly populated pastoral uplands of Wiltshire (**Salisbury Plain** in the south and **Marlborough Downs** in the north). The two east and west branches form in their eastern portion the **North and South Downs**, two lines of hills which are pierced by small rivers on their way to the estuary of the Thames or the English Channel (the **Medway, Stour**, and others cutting through the North, and the **Arun, Ouse**, and others through the South Downs). Between the North Downs and the more northerly branch of the chalk a long wedge of more recent geological date runs far up the valley of the Thames, and, being composed chiefly of clay, has had the name of **London Clay** given to it. A second, smaller, but more elevated wedge runs up between the North and South Downs, and is called the **Weald**, an old name for forest, from the fact of its once having been completely covered with trees. The rocks in this latter wedge are of older date than the chalk, and the wedge has been formed by the wearing away of the chalk from above it, so that the steep slopes, the edges or escarpments of the North and South Downs, look inwards upon the older rocks beneath.

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[1] See above, p. 80.

Except the Thames and the rivers of the Wash Basin, all the **streams** of south-eastern England are very short, and generally flow either eastwards into the German Ocean or southwards into the English Channel. The **Thames**, the longest river in England, rises in several springs on the eastern slopes of the Cotswold Hills, about 170 miles above London Bridge,[1] and begins to be navigable at Lechlade, near the point where the counties of Gloucester, Wilts, and Berks meet; and hence at this point begins the canal which connects it with the Severn. The importance of the river as a physical feature is shown by the fact that from a little above Lechlade it forms a boundary between counties—Gloucester, Oxford, Buckingham, Middlesex, and Essex on the north, and Wilts, Berks, Surrey, and Kent on the south. The more important towns on its banks are **Oxford**, **Reading**, **Windsor**, **Richmond**, and **London**, in addition to the towns already mentioned on its estuary.

The principal rivers of the **Wash Basin** are the **Witham**, the **Welland**, the **Nen** or **Nene**, and the **Ouse**. The first of these describes a semicircle in Lincolnshire, passing at the city of **Lincoln** through a breach in the High Dyke, before it turns southwards between these heights and the Lincoln Wolds. The others all wind sluggishly from the south-west through the level fen country. On the Welland are situated **Stamford** and **Spalding**, both in Lincolnshire; on the Nen, **Northampton** and **Peterborough**, both in Northamptonshire; and on the Ouse, **Bedford** and **Huntingdon**, in the counties to which they give name, **Ely** in Cambridgeshire, and **King's Lynn** in Norfolk.

People.—The **earliest inhabitants** of England known to history were **Kelts**, but these were gradually displaced by later comers everywhere, except in the more mountainous or more inaccessible parts of the west and south-west. Evidence of their displacement is found in the fact that, except in Wales and Cornwall and some of the adjoining parts, the names of towns,

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[1] Hence about 220 miles above the Nore.

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villages, and human settlements in general are not of Keltic origin; but, even apart from history, the names of physical features, and especially of rivers, throughout the country still testify to the fact of the Kelts having occupied the whole area in early times. Such names as Avon, Ouse, Esk, and Wye, for waters and streams, are all Keltic, and they are so because later settlers continued to use for these permanent features of the country the names which they learned from previous inhabitants, while they gave their own names to the habitations which they built and settlements which they founded for themselves. On the other hand, in Wales, where the Welsh, a Keltic dialect, is still spoken by a large number of the inhabitants, the names of towns, villages, and parishes are almost all Keltic, and a large proportion of Keltic names are met with also in Cornwall, where a Keltic dialect was spoken till the last century, and in the Isle of Man, where the Manx, another Keltic dialect, is not yet quite extinct.

The first invaders of England subjugated but did not displace the Kelts. These were the **Romans**, who held possession of England for between three and four hundred years (from the middle of the first century to the end of the fourth century A.D.).[1] The evidences of the presence of the Romans still found in place names are such as might be expected from the nature of the occupation. As the Kelts were not displaced by the Romans, and Keltic towns were sometimes made the seats of Roman colonies and strongholds, Keltic elements still survive in the names of many of the old Roman cities, but that element is frequently combined with a Latin termination. Hence we have such names as Lincoln, in which the first part of the word is the Keltic *Linn*, meaning a deep pool, and the second is a corruption of the Latin *colonia*, a colony; and hence, too, we have many compound names in which the second part is one of the many corruptions of the Latin *castra*, a camp (Lancaster, Manchester, Colchester, Bicester, Exeter, &c.). Another important relic of Roman rule in the place names of England is derived from the

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[1] The extent of Britain in Roman occupation varied. At one period Roman rule extended as far north as the Forth and Clyde (where the remains of a Roman wall still mark its boundary), but its boundary for the longest period was the wall referred to on p. 90.

roads[1] which they constructed between the chief cities of Roman Britain, as they did in all the provinces of the Roman Empire. The Latin name of *strata* applied to these roads survives not only in such names as **Watling Street**, which still designates one of the most important of these roads, but also in the various corruptions, *Strad, Strat, Stret, Streat,* &c., which appear in the names of towns built on Roman roads (Stratton, Stretton, Stratford, Streatham, &c.)

After the withdrawal of the Romans, invasions by various Germanic tribes followed from the middle of the fifth century downwards. The chief of the tribes were **Saxons** and **Angles**, or **Engle**, the latter of whom ultimately gave their name to the whole country and the language spoken there. It was these settlers and their descendants who founded most of the towns and villages now scattered over the country, and it is to them that we owe the numerous names ending in *ham* (home), *ton* (enclosure, town), *borough*, *bury*, &c., *worth* (enclosure), *leigh*, *ley* (a pasture), *ford*, and many others. For centuries after their arrival, however, England was a divided country. Not till the early part of the ninth century did all the conquests of the Germanic tribes become united under one king, and for a hundred years after that ancient Britons still remained independent in Cornwall,[2] in Wales, and the region north of the Mersey and west of the Pennine Chain. Meantime new invaders and settlers appeared both on the east and west coasts—**Scandinavians** from Denmark and Norway—who have left evidences of their settlement in place names in Yorkshire, Lincolnshire, and neighbouring counties on the east side, as well as in Lancashire and adjoining counties on the west side.[3] In the former district are the **Danish** settlements, with names ending in *by* (abode), *thorpe* (village), and *toft* (enclosure); in the latter, **Norwegian** settlements, with names ending in *thwaite* (forest clearing), and other terminations. These settlers, however, all merged in the end in the English, who were allied both in race and language, and England accordingly remained a single kingdom. Another foreign conquest took place in the latter half of the eleventh century (1066), when William of Normandy landed and took possession of the crown of England; but the English inhabitants were not displaced as the Keltic Britons had been, and their towns and villages, as well as their language, still remained.

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[1] See Introd. p. 60.

[2] There is historical evidence to prove that in the early part of the eighth century Kelts and English were still living side by side in the county of Somerset but that towards the end of the following century no distinction between the two was known there.

[3] Numerous place names in Pembrokeshire bear witness to Norwegian settlements there, and others to a later settlement of Flemings which took place in the reign of Henry I. (twelfth century).

It was under the English rule before the Norman conquest that England was divided into **shires** or **counties**,[1] under earls or ealdormen, and hence most of these have English names, though Keltic elements are preserved in a few of them; as in Devonshire, named after a Keltic tribe called by the Romans Damnonii, Kent (Lat. Cantium), derived from a Keltic word *gwenta*, signifying a clearing, and in those counties which take their names from Roman cities which had previously been British (Lincolnshire, Gloucestershire, &c.)

Aspect of Roman Britain.—When first taken possession of by the Angles or Engle and other Germanic tribes, the aspect of England was very different from what it is now. Even at the time when the Romans quitted the country it is described as consisting mainly of **forests**, and what was not forest was to a large extent uninhabitable **marsh-land.** Forests occupied not only the Weald, but appear to have extended all along the south of Britain without a break except at Southampton Water. Forests and marshes in unbroken succession occupied the north and south shores of the estuary of the Thames, and north of the estuary forests stretched north-eastwards to the Wash, which was at that date more extensive than it is now, and was succeeded by fens extending even in the sixth century as high as Cambridge, Huntingdon, and Stamford—that is, from thirty to forty miles inland from the present shores of the Wash. It was behind forests, marshes, and the uninhabited uplands of the Pennine Chain that Keltic Britons so long maintained their independence north of the Mersey. The earliest settlements, those of the Britons before the arrival of the Romans, were mainly on chalk uplands, whose thin soil[1] was easily cleared of trees—on the North Downs in Kent, the Downs of North Hampshire, Wiltshire, and the similar uplands of Norfolk. The Keltic word *gwenta* hence gave name not only to Kent, but also to Winchester (*Gwenta* or *Venta Castra*) in the western clearing, and the ancient Norwich, *Venta Icenorum*, in the northern clearing. When the inhabitants did descend to the valleys it was at first only narrow strips along the river banks that were settled, and it was only by the gradual felling of forests and draining of marshes that the whole country came to be peopled. It must not, therefore, be imagined that when the Keltic Britons were driven out of their homes by the Angles and Saxons the number of people removed could be compared with that which afterwards occupied the land. The fact is that the Germanic invaders who became the English people first made habitable the greater part of the land which they ultimately covered.

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[1] In some cases the counties are representatives of old territories subject to independent chiefs but afterwards included in larger kingdoms; in other cases they are divisions of a larger whole that previously existed. Such, for example, are the counties of central England, the old kingdom of Mercia, these having been formed as districts round the county towns after the incorporation of Mercia with the growing kingdom of England.

The **clearing of forests and reclaiming of fen-lands** are processes that went on for centuries, and in the accomplishment of this task much was achieved by the monasteries, which, after the introduction of Christianity among the English,[2] sprang up in many retired spots. When the abbey of **Crowland** was built, in the seventh century, over a hermit's tomb in the fen country in the south of Lincolnshire, oaken stakes had to be driven in the ground to form a foundation and earth to be brought in boats to form a site, and after the monastery was erected the labours of the monks converted the country round into fertile meadow land. Not till a thousand years later was the great drainage scheme effected by which 700 square miles, an area equal to Berkshire, was added to the cultivable land in the same part of the country—in the district known as the **Bedford Level**, from the fact of its being carried out by two successive Earls of Bedford. Ever since then the process of draining has been going on ceaselessly, for it is by such works among others that English agriculture has been raised to the high pitch of excellence of which it now boasts.

[1] The soil in a chalky region is generally thin and poor, because chalk is so readily dissolved and washed away by rain (see Introd. p. 29); but north of the Thames the chalk and other rocks are covered in places with a richer soil spread over it by the movements of the ice during the Ice Age (see Introd. p. 54).

[2] See p. 107 *n.* 1.

Counties and Inland Towns.—With reference to their agricultural industries, the counties of England are divided into those which are chiefly **grazing** and those which are chiefly **corn-growing**, and this division may be conveniently adopted as a basis for subdivision into minor groups intended to assist the memory. In this division the three portions of the county of York known as the North Riding,[1] East Riding, and West Riding, which for most purposes are separate counties, are enumerated separately, so that the total number of counties is forty-two, twenty-one of which belong to each group. The twenty-one corn counties all belong, with the exception of Warwickshire, to the part described under the physical features as south-eastern England.

A. Corn Counties.

1. **Counties South of the Thames.**—Berkshire, Surrey,[2] Kent,[3] Hampshire, Sussex.[4]

2. **Midland Corn Counties.**—Oxfordshire, Buckinghamshire or Bucks, Hertfordshire or Herts, Middlesex,[5] Warwickshire, Northamptonshire, Rutlandshire, Huntingdonshire or Hunts, Bedfordshire or Beds.

3. **Eastern Corn Counties between the Estuary of the Thames and the Wash.**—Essex,[6] Suffolk,[7] Norfolk,[7] Cambridge.

4. **Northern Corn Counties.**—Nottinghamshire, Lincolnshire, East Riding of Yorkshire.

B. Grazing Counties.

5. **Northern Grazing Counties.**—Northumberland,[8] Durham, Cumberland,[9] Westmorland, Lancashire, West and North Riding of Yorkshire.

6. **Western Grazing Counties.**—Cheshire, Derbyshire, Leicestershire, Shropshire or Salop, Staffordshire, Herefordshire, Worcestershire, Monmouthshire,[10] Gloucestershire.

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[1] Ang.-Sax. *thrithing*=third part.

[2] Ang.-Sax. *Suth rice*=South kingdom.

[3] See p. 109.

[4] Land of the 'South Saxons.

[5] Land of the 'Middle Saxons.'

[6] Land of the 'East Saxons.'

[7] 'South folk,' or people, and 'North folk.'

[8] Land north of the Humber, hence now a much smaller territory than it once was.

[9] Land of the Keltic tribe of the Kymry.

[10] A Welsh county till the time of Henry VIII.

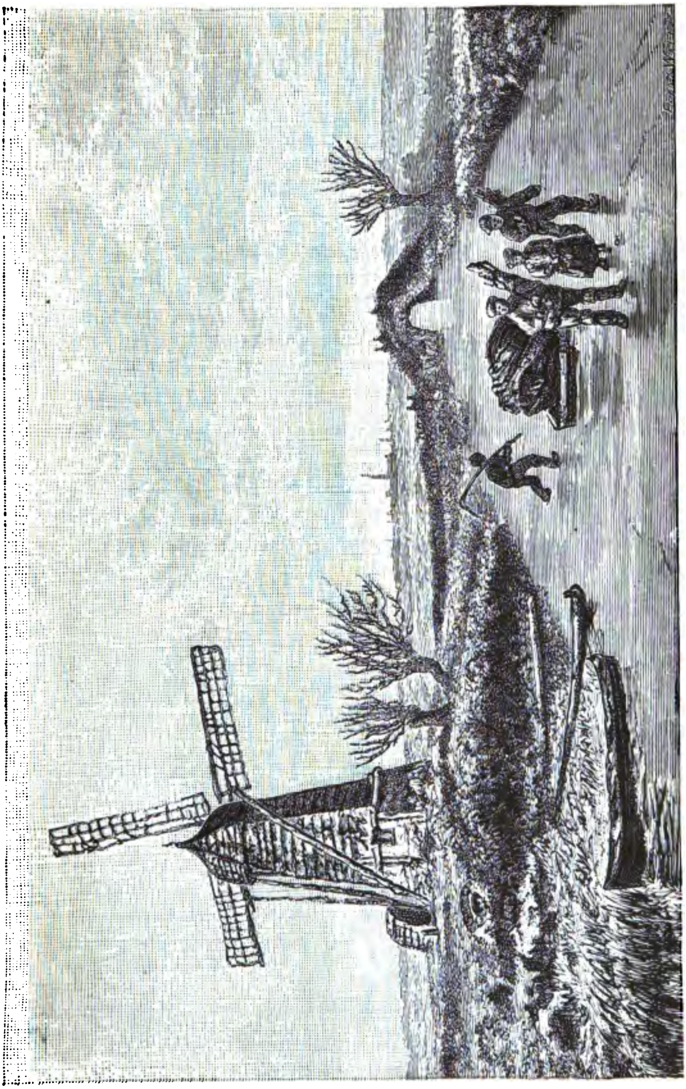

FIG. 18.—WINTER SCENE IN THE FEN COUNTRY. (From Heathcote's 'Fen and Mere,' by kind permission of the Author.)

7. **South-western Grazing Counties.**—Wiltshire or Wilts, Dorset, Somerset, Devonshire, Cornwall.

8. **Wales** (twelve counties, all grazing).

(1) North Wales.—Anglesey[1] or Anglesea, Carnarvon, Denbigh, Flint, Montgomery, Merioneth.

(2) South Wales.—Cardigan, Radnor, Pembroke, Carmarthen, Brecknock or Brecon, Glamorgan.

A. CORN COUNTIES.

1. **Corn Counties South of the Thames.**—The average density of population in this group of counties is about 600 to the square mile, the density increasing near London. On the chalk downs which cover so large a part of the surface the soil is generally thin and poor, best suited for sheep pastures;[2] but there is much fertile soil in the valleys and Weald, and the vicinity of London has stimulated agricultural production wherever advantages offered themselves. In Kent, **hops** form a specialty among the agricultural products, covering about one-eighth of the area bearing crops of any kind. They are also grown to a considerable extent in Hampshire. Kent has long been famous for its **paper manufactures**, and in former times the forests of the Weald supplied fuel for ironworks in this and the adjoining county.[3]

Except **Croydon** (Surrey), which may be considered as a suburb of London, there is no inland town in this section with a population of more than 50,000, but the smaller towns of importance are very numerous. Most of these lie in the breaches or depressions in the lines of the North and South Downs, positions which form the natural meeting-places of roads.[4] In those of the North Downs are **Farnham, Guildford, Dorking,** and **Reigate** in Surrey, and **Maidstone** and **Canterbury** in Kent; in those of the South Downs, **Winchester**, on the Itchen, in Hampshire, and **Arundel**, on the Arun, and **Lewes**, on the Ouse, in Sussex. **Farnham** and **Guildford** lie one at each end of a straight and narrow ridge called the **Hog's Back**, sometimes considered as the beginning of the North Downs. On a barren heath to the north of Farnham has been established **Aldershot Camp**, where the British troops are trained for field and siege operations. **Maidstone** has its importance as a centre of trade increased by the fact that it stands in the midst of a rich agricultural district and on a navigable river, the Medway. **Canterbury** is celebrated as possessing the cathedral church of the

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[1] A Norwegian name signifying Isle of the Angles. (See p. 101.)

[2] A well-known breed of sheep takes its name from the South Downs.

[3] The last ironworks of the Weald were still carried on late in last century.

[4] See Introd. p. 61 (3).

Primate of all England, built on the site of the first Christian church erected after the arrival of the Angles and Saxons.[1] The early importance of this city is due to the fact that it arose on a ford of the Stour in the early clearing of Kent,[2] at a point where the road from London to the eastern coast was crossed by a high-road from the south.[3] **Winchester**, another old cathedral city, the centre of another early clearing, was also a town of much more importance in the earlier history of England than it is now. Having been the capital of the kingdom of the West Saxons (Wessex), which ultimately absorbed all the other English kingdoms, it was for a time the capital of England. **Chichester** is a quiet cathedral city under the shelter of the South Downs, in the west of Sussex. In the heart of the Weald, on the borders of the county of Kent, is situated **Tunbridge Wells**, long famous and much frequented for its medicinal waters. Of the towns on the Thames, the most famous is **Windsor**, the castle of which has long been the favourite residence of the kings and queens of England. Opposite, on the Buckinghamshire side of the Thames, is the famous public school of **Eton**.

2. The Midland Corn Counties of England.—The average density of the population in this group is nearly 800 to the square mile, this high average being due to the fact that the greater part of **LONDON** belongs to this section of England.

The **city of London** proper lies in the county of Middlesex, and accordingly on the left bank of the Thames, and so also does the ancient city of **WESTMINSTER**, now united with London; but some of the other divisions which are now included within the larger London extend into the counties of Surrey and Kent on the right bank. The site occupied by London does not appear to have been inhabited in the time of the Keltic Britons, the surrounding forests and marshes rendering the neighbourhood a dreary waste; but the importance of the site was recognised by the Romans, and since the time of William the Conqueror London has been the virtual, if not always the recognised, capital of the country. The population within the boundary of the contiguous boroughs[4] returning members to Parliament was upwards of 4,000,000 at the census of 1881.

Outside of London, the only town in this section with more than 100,000 inhabitants is Birmingham, on the borders of Warwickshire, where that county extends into the coal and iron region of central England; and besides Birmingham, Northampton, in the heart of the table-land of Northamptonshire, is the only town with more than 50,000 inhabitants.

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[1] Christianity was first preached to the Angles of Kent at their capital, Canterbury, by St. Augustine at the close of the sixth century.

[2] See above, p. 102.

[3] See Introd. p. 61 (3).

[4] Including not only Deptford, Lewisham, Greenwich and Woolwich, but also West Ham and Croydon.

BIRMINGHAM (440), a town at least a thousand years old, has long been celebrated as the principal seat in the world of all kinds of hardware manufactures. Not far from it the first manufactory of steam-engines was established by Watt and Boulton. **Northampton** is the centre of the boot and shoe manufacture of the country. Among other towns noted for special manufactures are **Coventry**, in Warwickshire, a little to the south-east of Birmingham, celebrated for its ribbons and watches, as well as its bicycles and tricycles, and **Luton**, in the south of Bedfordshire, the chief seat of straw-plait manufactures. **Oxford**, on the Thames, is the seat of the oldest of English universities. The date of the foundation of the University (which now has more than twenty colleges attached to it) is uncertain, but Oxford is known to have been a centre of learning at least as early as the tenth century. Of the Warwickshire towns on and near the Avon, **Rugby** is the seat of a famous public school, and **Stratford-upon-Avon** is memorable as having been the birthplace of Shakspere (in 1564) [1]; **Leamington**, near Warwick, is noted for its medicinal waters. **Huntingdon**, on the Ouse, was the birthplace of Oliver Cromwell. **Aylesbury**, in Buckinghamshire, is the centre of a vale which takes its name from it and is one of the richest grazing lands in England. It lies immediately beyond the escarpment of the Chiltern Hills.

FIG. 19.—BRIDGE OF ST. JOHN'S COLLEGE, CAMBRIDGE.

3. The Eastern Corn Counties between the Estuary of the Thames and the Wash.—In this section the density of population is less than 250 to the square mile. Except **WEST HAM** (Essex), which is really an eastern suburb of London, there is no town in this group of counties with more than 100,000 inhabitants. Besides coast towns, the principal towns are agricultural centres of trade.

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[1] Also the place where he died in 1616.

In Essex, **Chelmsford**; in Suffolk, **Bury St. Edmunds** (once the seat of a celebrated abbey); in Norfolk, **Norwich**; in Cambridgeshire, **Cambridge.** **Norwich** is also an important manufacturing town, which it has been since the reign of Queen Elizabeth, when a number of Protestant Flemings driven from the Netherlands by religious persecution settled in it and introduced their own industries. **Cambridge** is the seat of a University, which has for centuries been the rival of that of Oxford. In the middle of Cambridgeshire the cathedral city of **Ely** lies in the fen country, in a district which, having once been surrounded by water, is known as the **Isle of Ely.** As an agricultural specialty in this region may be mentioned the experiments that have been made in some parts of Suffolk in the growing of sugar-beet.[1]

4. Northern Corn Counties.—The East Riding of York, the most northerly part of this section, is bounded on the north by the Derwent and on the west by the Ouse, and thus includes only parts of the fertile vales of Pickering and York, but in the south-east it includes the rich flat of Holderness. The south-east of Lincolnshire is known as Holland, and reminds one of the Holland of the Continent by its extreme flatness, its rich soil, its canals and windmills, and the dykes by which at some parts the land has to be protected against the sea and inundations of rivers. The average density of population in the section is upwards of 250 to the square mile. Large towns are few.

The manufacturing town of **NOTTINGHAM**, on the Trent, is the only town with more than 100,000 inhabitants besides the seaport of Hull. **Grantham**, in the south-west of Lincolnshire, is a busy agricultural centre on the main line of the Great Northern Railway. The ancient city of **Lincoln** occupies a position analogous to those of the towns of the North and South Downs, being situated where the Witham makes a breach through the High Dyke. Its importance in former times was increased by the fact that the Witham was navigable to this point for large vessels, so that Lincoln was one of the richest seaports in England till long after the time of William the Conqueror.[2]

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[1] A plant with a thick tapering root resembling that of a carrot, and containing a great deal of sugar. It is the chief source of the sugar used on the continent of Europe, where the plant is very largely cultivated on that account. It is allied to mangold. See p. 75 *n.* 4.

[2] See Introd. p. (61) (1) (*b*); and comp. p. 106.

B. GRAZING COUNTIES.

5. Northern Grazing Counties.—In this section the average density of population exceeds 600 to the square mile, which is explained by the number of large mining and manufacturing towns belonging to the coal-fields in the north and south. Some parts of the section are among the most thinly peopled districts of England. Westmorland, with less than 100 to the square mile, is more sparsely populated than any other English county. Cumberland and the North Riding of Yorkshire are in some parts quite as scantily peopled. The Swale and the Ure, which unite to form the Ouse, still rise 'in a dreary waste and horrid silent wilderness among the mountains,' as they did in Camden's[1] time, three hundred years ago; but these streams, as well as the Nidd and the Aire, two tributaries of the Ouse on the right bank, all traverse rich sheltered valleys in the lower parts of their course. Their upper courses, too, are interesting, for they all take their rise amidst thick masses of limestone, hence known as **mountain limestone**, which, like such rocks elsewhere, is full of caves and fissures in which the streams frequently disappear for a time. The Aire indeed is first seen as a full-flooded stream issuing[2] from a cave under a huge limestone cliff. Waterfalls on these head-streams are numerous.

The principal towns of the northern coal-fields are all coast towns. Among the inland towns are, in Northumberland, **Morpeth**, with iron foundries, a considerable town about 15 miles to the north of Newcastle; **Hexham**, west of Newcastle, a much smaller town, purely an agricultural centre, occupying a position on the Tyne in the depression between the Northumbrian hills and the highlands of the Pennine Chain.[3] In Durham, **Darlington**,[4] on the Tees, and **Bishop Auckland**, on the Wear, are both busy manufacturing towns such as might be expected in a district rich both in coal and iron; while the city of **Durham**, on the Wear, is an agricultural centre, and is chiefly famous for its finely situated cathedral. In Cumberland, Carlisle (see p. 89). In **South Lancashire** are clustered most of the **towns engaged in cotton manufactures** and the industries subsidiary to that (such as the making of spinning and weaving machinery). The principal of these are, besides Manchester, **OLDHAM**, **BLACKBURN**, **BOLTON**, **PRESTON**, **Rochdale**, **Burnley**, **Bury**, **Ashton**, **Wigan**. **MANCHESTER**[1] (420), the centre of all, is, as its name shows,[2] an old Roman town, and was famous for its woven fabrics more than 300 years ago. With the contiguous town of **SALFORD**, it contains as large a population as Liverpool. **St. Helen's**, in South-west Lancashire, is the chief seat of the English glass works. In the south-west of Yorkshire are clustered the **towns engaged in the woollen manufacture**, of which **Leeds**, on the Aire, is the centre. Besides Leeds, the principal are **BRADFORD**, **Halifax**, **Huddersfield**, **Dewsbury**, and **Wakefield**. **LEEDS** (310) is, like Manchester, an old city long famous for its manufactures. **SHEFFIELD** (290), on the Don, where it begins to be navigable, in the extreme south of Yorkshire, lies in a district rich in iron as well as coal, and likewise containing a kind of stone admirably suited for making grindstones, and hence has long been famous for its cutlery, as it is now also noted for its large plates of rolled steel used in building ships of war. **Doncaster**, lower down on the Don, is an old Roman town, now an important railway centre. The ancient importance of **York**,[3] on the Ouse, is still indicated by the fact that this city is the seat of the second of the two archbishops of the Church of England. Its cathedral is one of the most magnificent in the country.

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[1] A celebrated antiquary and historian, author of the *Britannia*, a book containing an exhaustive description of the British Isles so far as they were known in his day.

[2] At Malham Cove. Comp. the Jordan, p. 230, and see Introd. p. 29 and p. 166, n. 2.

[3] See p. 90.

[4] Darlington is interesting as one of the termini of the first passenger railway ever constructed—the railway to Stockton.

6. The Western Grazing Counties of England.—With the exception of Leicestershire, the counties belonging to this section lie in pairs, which succeed one another from north to south. The average density of population is above 450 to the square mile,[4] a high density, due to the fact that here lie most of the great manufacturing towns of England not belonging to the previous section. These lie chiefly in the north-east.

Stockport, on the borders of Lancashire and Cheshire, belongs to the cotton group of manufacturing towns; **Macclesfield**, a little farther south, is one of the centres of the English silk manufactures[5]; **Crewe**, still farther south, is the seat of the works of the London and North-Western Railway. Silks and hosiery are the staples of **Derby**, **Chesterfield**, and other manufacturing towns of Derbyshire, in which county lie also the watering-places of **Buxton** and **Matlock**, both with hot springs.[6] Derby is also the head-quarters of the Midland Railway

[1] It is situated at the highest navigable point on the Irwell, a tributary of the Mersey. See Introd. p. 61 (1). [2] See p. 100. [3] See p. 93.

[4] The nine counties of Lancashire, the West Riding of Yorkshire, Cheshire, Derbyshire, Nottinghamshire, Staffordshire, Warwickshire, Worcestershire, and Gloucestershire, having an area little more than that of Belgium, contain most of the great manufacturing towns of England, and had at last census a population of nearly 10 millions, or about 850 to the square mile.

[5] The other important seat of silk manufactures in this country is the district of Spitalfields, in London.

[6] The scenery in the neighbourhood of Buxton and Matlock and in the northern half of Derbyshire generally is very attractive. This half of the county contains

Company, and the seat of its workshops. **Stoke-upon-Trent, Hanley,** Burslem,[1] and **Newcastle-under-Lyme,**[2] in North Staffordshire, are the principal towns of the **Potteries**; while in South Staffordshire, **WOLVERHAMPTON, Dudley,**[3] **Walsall, Wednesbury,** and **West Bromwich,**[4] are the chief seats of the hardware manufacture outside of Birmingham, which lies just beyond the borders of the county.[5] **Burton,** in the east of Staffordshire, is noted for its breweries. **Bromsgrove,** in the north of Worcestershire, is another town engaged in hardware manufactures, and **Kidderminster,** on the Stour, in the same county, is well known for its carpets. **Evesham,** in Worcestershire, and **Tewkesbury** and **Gloucester,** in Gloucestershire, are among the quiet agricultural towns already referred to as belonging to the lower valley of the Severn; and here also are the beautiful health resorts of **Cheltenham** (Gloucestershire), immediately under the shelter of the Cotswold Hills, and **Great Malvern,** on the Malvern Hills (Worcestershire). Both have medicinal springs. **BRISTOL,** in the extreme south of the county of Gloucester, is largely engaged in sugar-refining and the manufacture of tobacco, a consequence of the trade it has long maintained with the West Indies.[6]

In the western parts of this section, the counties of Monmouth, Hereford, Salop, and the greater part of Cheshire, manufacturing towns are few. On the Severn, a little below **Shrewsbury,** the county town of Salop, lies one of the few, **Coalbrookdale,** in a small coal-field with deposits of iron. **Pontypool,** in the west of Monmouth, belongs to the mining district of South Wales. **Cheshire** is an excellent grazing county, noted for its **cheese,** and **Herefordshire** is the richest of all English counties in **orchards.**

7. South-western Grazing Counties.—The average density of population in this section is not much more than 250 to the square mile, and accordingly about the same as that of the eastern and north-eastern corn counties. The moorlands of Cornwall are as scantily peopled as those of the north-west of Yorkshire, and the population of that county is chiefly gathered round the mining towns. Besides dairy farms, the counties of Devon,

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the end of the Pennine Chain, and here, as in the West Riding of Yorkshire, that chain is flanked by masses of mountain limestone with caves and disappearing rivers. Buxton, 900 feet above sea-level, is the highest town of any size in England.

[1] Burslem is the birthplace of Wedgwood, the founder of artistic pottery in Britain. His works were first situated at Burslem, but afterwards removed to a place which he called Etruria, in allusion to the fine works in pottery executed by the inhabitants of ancient Etruria, in Italy. Burslem is not a separate borough, but is included in the Parliamentary borough of Hanley.

[2] All these boroughs are contiguous; their united population in 1881 was about 190,000.

[3] Chiefly in Worcestershire.

[4] All these boroughs are contiguous; their united population in 1881 was about 480,000.

[5] A small part is within the county.

[6] See p. 86.

Somerset, and Dorset are all rich in apple and other orchards. The chalk uplands of Wiltshire are best adapted for sheep. The inland towns in this section are all comparatively small. None except **Bath** has a population exceeding 50,000, and in few does it even exceed 10,000.

Among these towns, those which are of most historical importance are **Bath** and **Salisbury**. The former, situated on the right bank of the Lower Avon, in the north of Somerset, was noted and frequented for the hot springs to which it owes its name even in the time of the Romans, and is still a fashionable watering-place, though not so pre-eminent in this respect as it was in last century. **Salisbury**, in the south of Wiltshire, lies on the East Avon, just at the point where that river being joined by smaller streams is about to descend from the uplands to the lower ground of the New Forest. The present city is comparatively modern, having grown up in the thirteenth century round its magnificent cathedral, which dates from that period. Its predecessor, **Old Sarum**, occupied a commanding situation two miles to the north, and was a place of great importance in the western clearing, and even as late as the thirteenth and fourteenth centuries was sometimes chosen as the place of assembly for English Parliaments. Later on, when its strength was of no more consequence, it was deserted in favour of Salisbury in consequence of its scarcity of water. About six miles farther north than Old Sarum is **Stonehenge**, a remarkable arrangement of standing stones, such as are met with in various other parts of the British Isles.

There are no large manufacturing towns in this section of the country, but one or two small towns have their names associated with special manufactures. **Honiton**, in south-east Devon, is noted for its lace, and **Wilton**, a few miles to the west of Salisbury, for its carpets. **Taunton**, in the south of Somerset, and the still smaller **Dorchester**, the county town of Dorsetshire, are merely agricultural centres.

8. **Wales.**[1]—The density of population in the six counties of North Wales is little more than 150 to the square mile, that in the six counties of South Wales upwards of 200 to the square mile, and this higher density is due solely to the large mining and smelting population of the county of Glamorgan and parts of the adjoining counties.[2]

In the interior of Glamorganshire there is the mining town of **Merthyr Tydfil**, which, as a parliamentary borough, includes Aberdare and Dowlais, and has a population of nearly 100,000. In the south of Brecknockshire is the mining town of **Llanelly**, and another **Llanelly** belonging to the same great coal-field is situated on the coast of Carmarthenshire. All the larger towns of this region have grown in recent years, with remarkable rapidity, and, like similar towns elsewhere, include a large Irish element among their population. The largest town in North Wales is also a mining town—**Wrexham**, in Denbighshire. **Mold**, **Flint**, and **Holywell**, are mining towns in Flintshire.

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[1] Area about 7,400 square miles.

[2] See p. 94.

Islands.—The **Isle of Man**, almost equidistant from England, Scotland, and Ireland, is inhabited by a people of Keltic origin, among whom a Keltic dialect was spoken till a recent period. Flat in the north, it has among the hills of the south mines of lead, zinc, and other metals. The island has a separate legislature known as the Court of Tynwald, from the name of the mound where its laws are promulgated. Chief town, **Douglas**, on the east coast.

Isle of Wight. (See p. 84.)

Channel Islands, a group separated by a very shallow sea from the west coast of Normandy, with a total area of about 75 square miles, or one-third of that of the Isle of Man. They are the last relics of the Norman provinces which became attached to the British crown at the Conquest. The principal islands are **Jersey**, **Guernsey**, **Alderney**, and **Sark**, and the chief town, **St. Helier's**, in Jersey. French is still spoken along with English. The soil is rich and the population very dense. The chief islands have each a separate legislature.

Heligoland is a small rocky islet off the mouth of the Elbe, taken by the British from the Danes in 1807. It is now a favourite watering-place.

SCOTLAND.

Coast line.—The whole of Scotland[1] lies to the west of the line which divides the older from the newer rocks of England,[2] and the rocks of which it is made up are almost all of ancient date. Just as in England, however, the rocks are mostly harder on the west coast than on the east, and the western coasts are on the whole more rugged than the eastern. Even on the east coast of Scotland, however, bold cliffs predominate except along the margins of the firths,[3] which form the most prominent feature of this coast. **Fifeness**[3] is the only cape on this coast which forms a low spit like Spurn Head or Dungeness in England. **St. Abb's Head**, in Berwickshire, **Kinnaird's Head**, in Aberdeenshire, where the coast begins to trend westwards along the south of the Moray Firth, and **Duncansbay Head**, in Caithness, where the coast once more begins to trend westwards along the south shore of the Pentland Firth, are all bold rocky headlands from 60 to 300 feet high.

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[1] Area including smaller islands above 30,000 square miles. [2] See p. 79.

[3] The name corresponds to the Scandinavian *fiord* or *fjord*, although the Scotch sea-lochs of the west have more analogy to the Norwegian fjords than the Scotch firths have. The termination *-ness* (=Naze, Nez, &c.), meaning nose or headland, and the designation *sound* are also Scandinavian terms. See p. 123.

The whole line of the **north coast** is a series of wild cliffs, and **Cape Wrath**, which forms its western extremity, is a pyramid of gneiss towering to the height of 300 feet. The same wild character belongs to almost the whole of the deeply indented west coast.

On this side the most prominent capes are **Ardnamurchan Point**, the most westerly on the mainland of Great Britain, the **Mull**[1] **of Kintyre**, at the southern extremity of the long and narrow peninsula of Kintyre, the **Mull of Galloway**, in the south of Wigtonshire, at the end of the hammer-headed peninsula to which is given the name of the **Rhinns**[2] **of Galloway**.

The coast presents a greater contrast between east and west when we consider its outline than when we pay regard merely to its height. On the east side are a few large **estuaries** or **firths** bordered by low shores—the **Firths of Forth** and **Tay**, the **Moray Firth**, with that of **Cromarty** opening into it, and the **Dornoch Firth**; while on the west side there is a large number of narrow inlets called lochs running in all directions between highland tracts, and a large number of islands, generally as high and rocky as the adjacent mainland, separated by channels of the sea called **Sounds.**[3] The two chief lochs are **Loch Linnhe** and **Loch Fyne**, both in Argyllshire, and both running for the greater part of their length in much the same direction—namely, south-west and north-east. The principal sounds are the **Inner Sound** and **Sound of Sleat**, separating the rugged and mountainous island of Skye from the mainland; the **Sound of Mull**, between the island of Mull and the mainland; the **Sound of Jura**, between the island of Jura and the peninsula of Kintyre; and **Kilbrannan Sound**, on the other side of the same peninsula, separating it from the island of Arran.

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[1] Gaelic (see p. 123) for a 'headland.'

[2] From a Gaelic word meaning a point or promontory

[3] See note 2 on preceding page.

Pillars of basalt, an igneous rock which has often solidified in regular prisms, are to be seen in many parts of Mull, but the most remarkable array of such pillars in Scotland is that which forms the so-called **Fingal's Cave**, on the small island of Staffa to the west of Mull.

Two openings on the west, however, correspond to those of the east, and hence have similar names. These are the **Firth of Clyde** and the **Solway Firth**, into the former of which open two lochs, **Loch Long** and the **Gare Loch**; while **Luce Bay** and **Wigton Bay**, along with the smaller **estuary of the Nith**, open into the latter.

Surface.—Under this head the area of Scotland is divisible into three parts—a **highland area in the north-west**, a **middle lowland area**, and a southern highland area, more usually spoken of as the **Southern Uplands**, since its general aspect is so different from that presented by the Highlands proper; but besides the middle of Scotland the Lowlands (under 500 feet in height) occupy, as already indicated, the borders of all the firths, and likewise the broad ends of the two great peninsulas in the east, constituting the east of Aberdeenshire and almost the whole of the county of Caithness.

1. The **Highlands** are bounded on the south by a line running from the shores of the Firth of Clyde opposite Greenock, north-eastwards to the neighbourhood of Stonehaven. This boundary marks the line along which a great movement has taken place in the crust of the earth, a movement which is also marked by another line having a nearly parallel direction, running along what is called **Glen More**, or the Great Glen, between Loch Linnhe and the Moray Firth. This long but narrow glen[1] (60 miles long), the highest part of which is little more than 100 feet above sea-level, divides the Highlands into two sections, a south-eastern and a north-western. In some remote period of the world's history the whole piece of land between it and the south-eastern boundary of the Highlands, has been lifted up to a greater height than the portions of the crust[2] on either side, and this event has brought about the main features of the landscape as it now exists in that part of Scotland. On the south-east an area mainly consisting of soft sandstones has been placed

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[1] This glen is similar in form and parallel in direction to the Menai Strait, which differs in being wholly submerged

[2] See Introd. p. 25 *n.*

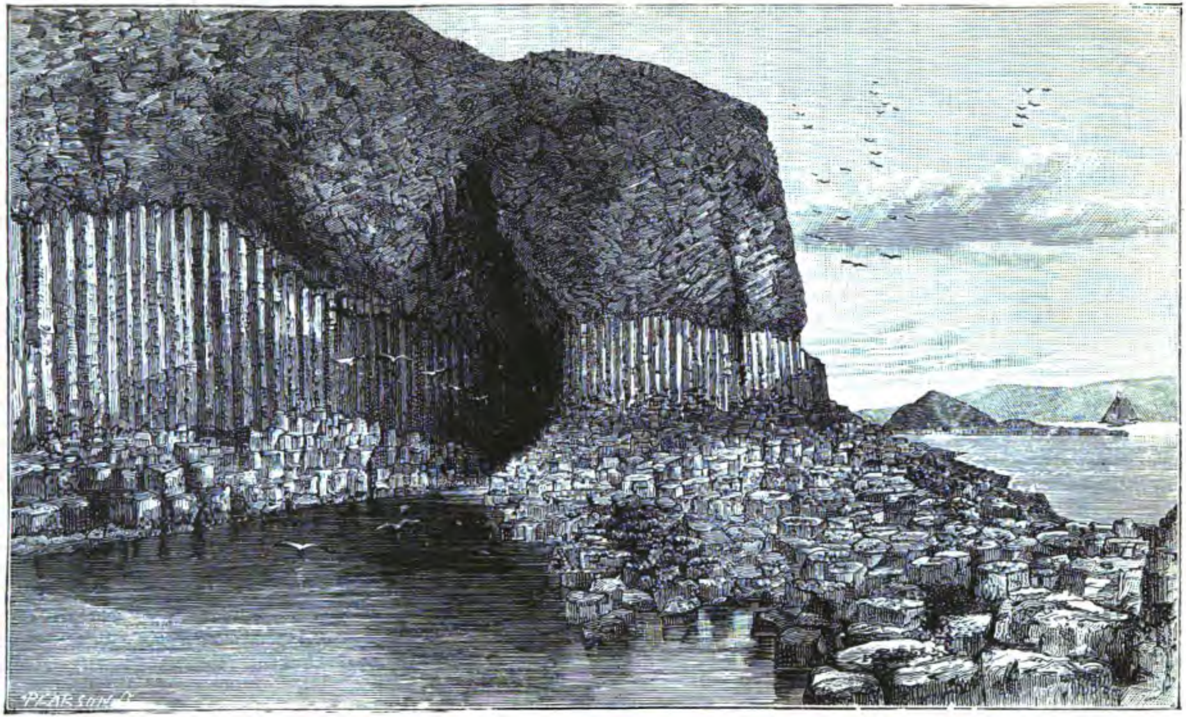

FIG. 20.—FINGAL'S CAVE

side by side with slaty and other harder rocks on the north-west, and the softer rocks have been worn away more quickly so as to form the middle lowlands. On the north-west the great fissure where the elevation took place has left rocks of the same hard texture still contiguous to one another, but it has compelled the rivers to flow along the fissure, and thus with the help of rain, frost, and ice, to hollow out the deep valley now known as Glen More. (See Introd. pp. 26, 32, 54).

This glen is occupied by two lakes, **Loch Ness** and **Loch Lochy**, and the whole glen is now made navigable from end to end for large vessels by the **Caledonian Canal**, connecting these lakes with one another, and with the outlets of the glen towards the German Ocean and the Atlantic.

Both east and west of this great line of division the Highlands of Scotland have the same character. There is nothing that can be called a mountain chain or range. The whole region is, like Wales, an area covered everywhere (except in the parts of the east already mentioned) by mountains and hills separated by deep valleys (glens), which have been hollowed out in what seems to have been once an elevated plateau. General names applied to different parts of the Highlands denote only asemblages of mountains. Such, for example, are the **Grampians**, a name usually applied to all the mountains between the southern boundary of the Highlands and **Strathspey**[1] (valley of the Spey), sometimes in a wider sense to include the **Monagh Lea** mountains, the assemblage between Strathspey and Glenmore. The highest peaks in Britain occur in the Grampians proper, one group, including **Ben**[1] **Macdhui** and **Cairngorm**,[2] on the borders of the counties of Banff, Aberdeen, and Inverness, another, to which belongs **Ben Nevis**, the highest mountain in the British Isles, in the south of Inverness-shire. The former group has no fewer than six, the latter two peaks above 4,000 feet in height. Ben Nevis, the summit of which has recently been made the seat of a meteorological observatory, attains the height of 4,400 feet.

The main **drainage** of the south-eastern section of the Highlands radiates from a district in the south of Inverness, whence the **Spey** flows north-east to the Moray Firth, the **Dee** east to the

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[1] *Strath* and *Ben* are both Gaelic, the one meaning a valley, the other a mountain or hill.

[2] This mountain gives its name to a yellow or brown kind of rock crystal found upon it.

German Ocean, the **Garry** south-eastwards to the Tay, and then to the same sea, and the **Spean** south-westwards to Loch Linnhe. In the course of the rivers occur numerous inland lakes (also called in Scotland lochs), the most famous of which lie on the southern borders of the region—**Loch Katrine** on the Teith, a tributary of the Forth, and **Loch Lomond** on the Leven, an influent of the estuary of the Clyde. The latter is the largest lake in Great Britain, and both are celebrated for the beauty of their scenery. It is overlooked by **Ben Lomond** (3,200 feet), the most frequently ascended of all the highland mountains.

Though so far from forming a continuous chain, the mountains of this section of the Highlands are so closely packed together that there was long only one road from north to south across them. It ascended by the same route as the railway now follows up the valley of the Garry,[1] and up its most northerly tributary, to descend again by the most southerly of the tributaries of the Spey and then by the Spey valley. **Killiecrankie** is one of the most important passes in this route.

The **north-western section of the Highlands** is similar in character to the one just described. There, also, the highest mountains often occur in groups of peaks of about the same height. The **water-parting** in this section is an irregular line running from north to south, close to the west side, where numerous mountain torrents are precipitated to the heads and sides of the sea-lochs.

Both sections of the Highlands are thinly populated. There are no minerals of any importance. The soil is too scanty, the climate too cold and damp, the surface too irregular and in general too high for agriculture. Only a little oats and green crops are grown in small farms called crofts in the valleys. Sheep and cattle[2] pastures occupy a much greater area, and much of the surface is laid out in deer forests or in game preserves.

2. The **Southern Uplands** are similar in character to the Highlands of Scotland, so far as the arrangement of the heights is concerned; but they are composed of softer rocks, they are lower in height, generally grass-covered to their broad flat tops, and

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[1] See Introd. p. 60.

[2] Highland cattle are large-horned and shaggy, and the principal herd of sheep in the Highlands is known as the *black-faced*, a very hardy breed, able to subsist on the scantiest pasture. It has a coarse fleece, but yields excellent mutton.

intersected by more numerous depressions, the direction of which is very well indicated by the lines of railway running across them from north to south and from east to west. One series of railway lines proceeding from Girvan, on the coast of Ayrshire, by Lanark and Dalkeith to Edinburgh, runs along a depression that may be held to mark the northern boundary of the Uplands. To the south of that depression the elevated tracts are more compactly heaped together than they are to the north. Their culminating point, **Hart Fell**, in the south of Peeblesshire, about midway between the Firth of Forth and the Solway Firth on the north and south, and between the coast of Ayr and that of Northumberland in the west and east, attains a height of more than 2,600 feet.[1] Towards the east, three railways proceeding southwards from Edinburgh enclose two table-lands, the edges of which, as seen from the Lowlands, present the appearance of two ranges of hills stretching from south-west to north-east, and have hence been called the **Moorfoot** and the **Lammermoor Hills.** The former plateau lies between the railways which follow two tributaries of the Tweed and the Tweed itself to Melrose, the one by Peebles, and the other by Galashiels. The latter is situated between the second of these two depressions (that of the Gala Water) and the Lowlands of the east coast.

The **drainage** of the Southern Uplands, like that of the south-eastern section of the Highlands, radiates from the centre, and three of the principal rivers, the **Clyde, Tweed**, and **Annan**, the first flowing north-westwards to the Firth of Clyde and the Atlantic, the second, eastwards to the German Ocean, and the third, southwards to the Solway Firth, actually have their sources within a mile of each other, near the point of junction of the counties of Lanark, Peebles, and Dumfries.

Sheep-rearing is the natural industry of the Southern Uplands, and the manufacture of woollen goods has long been a staple industry in the chief towns in the east—**Hawick, Jedburgh,** and **Kelso** in Roxburghshire, **Galashiels** and **Selkirk** in Selkirkshire. The Lowlands of Wigtonshire and Kirkcudbright, forming the district of Galloway, which gives name to a breed of cattle, are noted for their dairy farms.

3. The **Central Lowlands** of Scotland are by far the richest and most populous part of the country, containing not only most of

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[1] A little to the south-west in Lanarkshire is the elevated village of *Leadhills*, where mines of silver-yielding lead are known to have been worked since 1259.

the surface suitable for agriculture, but also the bulk of the mineral wealth. Within the limits assigned to this region—namely, a pretty straight line on the north-west running from the bend of the Firth of Clyde to Stonehaven, and a rather more irregular line on the south-east nearly parallel to it, extending from Girvan on the coast of Ayrshire to Dunbar on the east coast of Haddington—the surface is far from being uniform in level, and even contains large tracts rising to upwards of 1,000 feet in height. In the first place there is a broken string of heights running parallel to the north-west boundary from Forfarshire to the north of Ayrshire, these heights being formed of harder rocks that have better resisted the wearing agents which have lowered the surrounding surface. To a large extent the superior hardness is due to the fact of the rock composing these elevations being volcanic (that is, originally poured forth from the interior of the earth in a molten state, and then solidified), or at least to their having a protective covering of volcanic origin. Of this nature is the principal chain of hills in the series, the **Ochil Hills**,[1] which stretch between the heads of the estuaries of the Tay and Forth on the southern borders of Perthshire, and of this nature, too, are the **Sidlaw Hills**, farther to the north-east.

Adjacent to the Southern Uplands there is even more elevated land belonging to the Central Lowlands than north of the Firth of Forth. The principal heights in this quarter are the **Pentland Hills**, south-west of Edinburgh, the direction of which is the same as that of the hills already mentioned. Many of the isolated heights in the Central Lowlands, almost all in the basin of the Forth, are the stumps of old volcanoes.[2]

The **Lothians** (comprising the three counties of Haddington or East Lothian, Edinburgh or Mid Lothian, and Linlithgow or West Lothian), along with **Fife** in the east and **Ayrshire** in the west, are the principal agricultural districts in Scotland. Ayrshire is also noted for its dairy farms, and gives name to a breed of cattle very rich in milk. The mineral wealth is chiefly found in two large **coal-fields**. One of these is that to which **Glasgow** owes its present prosperity, and stretches from the middle course of the Clyde across the upper part of the Firth of Forth to Clackmannan and the west of Fifeshire. The other occupies the middle of Ayrshire.

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[1] The plain between the south-western extremity of these hills and those which occupy the greater part of Stirlingshire contains the chief roads into the northern Lowlands of Scotland, and has hence been the scene of numerous battles in Scottish history (at Stirling in 1297, at Falkirk in 1298 and 1746, at Bannockburn in 1314). The position of the Ochils is now well marked out by a ring of railways enclosing them. See Introd. p. 60.

[2] The greater part of the volcano has in every case been worn away by the various denuding agents (see Introd. p. 25–6), so that the form of a volcano can no longer be recognised. Compare the old volcanoes of France in cut, p. 137.

In the former, which is also rich in iron, there is besides Glasgow a cluster of towns in the north of Lanarkshire engaged in coal-mining and iron-working, the chief being the adjacent towns of **Coatbridge** and **Airdrie**. Farther to the north-east (in Stirlingshire) is **Falkirk**, another town with numerous ironworks, and close to it is **Carron**, the seat of the oldest ironworks in Scotland. **Paisley**, in Renfrewshire, one of the oldest manufacturing towns in Scotland,[1] seven miles to the west of Glasgow, lies a little to the outside of this coal-field, but near enough to enjoy all the benefits of cheap coal. In the Ayrshire coal-field, the principal town is **Kilmarnock**, another old manufacturing town.

In the east of Scotland are two small coal-fields, one a little to the east of Edinburgh and one on the opposite coast of Fife. Of less importance are the coal-fields of the extreme south of the country. The greater part of the Scottish coal-fields, and that part the most productive, is situated where the surface is under 500 feet in height, a circumstance which has greatly facilitated the construction of railways. Here, as in England, the closeness of the network of railways is a good indication of the situation of the coal-fields, and particularly of the more productive parts.

People and History.—The kingdom of Scotland takes its name from a Keltic tribe which immigrated from Ireland, beginning to make settlements in the west at least as early as the fourth century after Christ; and it owes that name to the fact that the kings of this tribe ultimately united the whole country under their sway. From an early date, however, the strength of the kingdom lay in the central and eastern Lowlands, where settlements of the same Germanic tribes as conquered South Britain (Angles and Saxons) began to be made as early as those of the Scots in the west, and became so numerous in subsequent centuries that their language supplanted that which was originally spoken in the region where their settlements were made. The English kingdom of Northumbria extended at one period from the

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[1] The manufactures of Paisley have had a varied history. At present the chief manufacture is that of thread.

Humber to the Firth of Forth, but early in the eleventh century its northern part (then belonging to united England) was ceded to the King of Scotland. Previously to this a British kingdom in the south-west (**Strathclyde**) had also been acquired by the Scottish kings. It was not till long after, that the present boundaries between England and Scotland were finally fixed, but from the date of the cession to the latter of the northern half of Northumbria an English dialect became more and more dominant in Scotland. Even in the fourteenth century, the period to which the oldest literature of this dialect belongs, the language was essentially the same as that of northern England, and not till the next century do we first find it spoken of as **Scotch.** Up to that time the term Scotch had denoted Gaelic, or the language of the Keltic Highlanders of Scotland, a language allied to the Irish and still spoken in some parts of the Highlands. As in England, settlements were also made by the **Scandinavians** in various parts of Scotland, chiefly on the islands and on the north and west coasts. **Caithness** and the northern parts of **Sutherland** are thickly studded with Norwegian place names, and the latter county bears a Norwegian name meaning Southern Land. The **Outer Hebrides** and the **Orkney** and **Shetland Islands** were long in the possession of Scandinavians, and the former were acquired from Norway only in 1266, the latter two groups from Denmark in 1469.

Counties and Towns.

1. Counties wholly or mainly belonging to the Central Lowlands.—Ayr, Renfrew, Lanark, Dumbarton, Stirling, Linlithgow or West Lothian, Edinburgh or Mid Lothian, Haddington or East Lothian, Clackmannan, Fife, Kinross, Forfar.[1]

2. Counties wholly or mainly belonging to the Southern Uplands.—Wigton, Kirkcudbright, Dumfries, Roxburgh, Selkirk, Peebles, Berwick.

3. Counties wholly or mainly belonging to the Highlands.—Bute,[2] Argyll, Perth, Kincardine, Aberdeen, Inverness,[3] Nairn,

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[1] The county of Forfar is almost equally divided between the Central Lowlands and the Highlands.

[2] Bute consists of the islands of Bute and Arran ; the former, the smaller but more populous of the two, mainly Lowland, the latter almost entirely Highland.

[3] To Inverness belongs *Skye* and the southern islands of the Outer Hebrides.

Elgin, Banff, Ross [1] and Cromarty, Sutherland, Caithness, Orkney and Shetland.[2]

The twelve counties belonging to the first of these groups contain less than a fifth of the entire area, but more than two-thirds of the population. The average density of population is nearly 450 to the square mile, as against about forty-seven to the square mile in the other counties. Hence most of the chief towns belong to the first group, and such as are not included in it belong to the Lowlands in the south and east of the territory comprised by the counties of the other groups.

Close to the Firth of Forth stands **EDINBURGH**, with its port **Leith**, (together 300) on the Firth itself. **Edinburgh**, built under the protection of a high rock well adapted for fortification, took its name from Eadwine, a powerful king of Northumbria in the seventh century. Though thus early a place of importance, it did not become the recognised capital of Scotland till after the murder of James I. in 1437. It is still the seat of the supreme law courts of Scotland, but is chiefly famous for its University and other educational institutions and for the beauty of its situation. The medical school belonging to the University has a world-wide reputation. **Leith** carries on a large coasting trade, and trade with the Baltic. On the Firth of Forth there stand also the smaller seaports of **Kirkcaldy** (Fife) on the north shore, **Grangemouth** (Stirlingshire) at one end of the important canal connecting the estuaries of the Forth and Clyde, and **Alloa** (Clackmannanshire) at the head of the estuary. Higher up, where the Forth winds with many meanderings through a rich plain, stands **Stirling**, under the protection of a castle-crowned rock very similar to that of Edinburgh. It was hence one of the older capitals of Scotland. Another old capital is the small town of **Dunfermline**, an inland town in the west of Fife, now only known for its linen manufactures. On the Firth of Tay are **DUNDEE** (Forfarshire), an important seaport and manufacturing town at the mouth, and **Perth**, at the head of the estuary. Being narrow at the mouth, like the estuary of the Mersey, the Firth of Tay is there encumbered by sandbanks, and the navigable channel has to be kept clear by dredging. The port of Dundee is the head-quarters of the British seal- and whale-fisheries. The staple manufactures of the town are jute [3] and linen. Dundee was for a short time connected by a railway bridge with the coast of Fifeshire, but the bridge was destroyed by a storm in the end of 1879. A second bridge is in progress. **St. Andrew's**, on a rocky coast on the east of Fifeshire, with the remains of a strong castle, is a town which enjoyed greater importance in former days than it does now. In Roman Catholic times it was the seat of the Scotch primate, and hence was chosen as the seat of the oldest of the Scotch Universities (founded in 1411).

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[1] To Ross belongs *Lewis*, the largest part of the northernmost of the Outer Hebrides. The *Hebrides* are mainly low-lying, but have large tracts occupied solely by heaths, bogs, and other waste land, and are inhabited only by a few fishermen and crofters. Chief town, Stornoway.

[2] These groups are also chiefly inhabited by crofters and fishermen. The cragsmen of Shetland who scale the coast cliffs in search of sea-birds' eggs are noted for their daring. In Orkney, Kirkwall; in Shetland, Lerwick, a great centre of herring, cod, ling, and tusk fisheries.

[3] A strong vegetable fibre obtained chiefly from India.

On the coast between the Firth of Tay and the Moray Firth we come first to the small Forfarshire seaports of **Arbroath** and **Montrose**, the latter on an inlet which forms an excellent harbour. Arbroath has considerable linen manufactures. Further north we come to the much more important seaport of **ABERDEEN**, on the small estuary of the Dee. At the mouth of the adjoining river Don is **Old Aberdeen**, with the older of the two colleges now belonging to Aberdeen University. Further north on the east coast of Aberdeenshire are situated the fishing towns of **Peterhead** and **Fraserburgh**, the latter just at the point where the coast begins to trend westwards. At the head of the Moray Firth is Inverness, the capital of the Highlands. **Wick**, on a small bay on the east coast of Caithness, though a very small town, is important as the centre of the extensive herring fisheries of the north. The manufacturing towns of the Tweed basin have already been mentioned.[1]

In former days, when the communication with England, carried on almost entirely by eastern routes, and with the Continent (especially France) gave importance to the towns of Scotland, the chief towns of the east were almost without rivals in the west; but in modern times this has been changed, mainly in consequence of the working of the rich western coal-fields and deposits of iron ore.

GLASGOW (Lanarkshire, 512; with suburbs upwards of 700), at the beginning of last century had a population of less than 15,000, and it is only within the present century that the number of its inhabitants has exceeded that of the united towns of Edinburgh and Leith. Now its population, including suburbs, is more than double the aggregate population of the latter two towns, and is inferior only to that of London among the towns of the British Isles. After the union of Scotland and England it grew rapidly through its commerce with the British colonies in America and the West Indies, and tobacco and sugar then furnished the material of its staple industries.[2] Now its manufactures are extremely varied, but the building of iron and steel ships is the industry chiefly associated with the name of the river on which it stands. The Clyde below Glasgow is at present the principal seat of this industry in the world. The port of Glasgow, accessible by nature only for small vessels, has been rendered by artificial means capable of accommodating ships of the largest size.[3]

Lower down on the Clyde stands the important sugar port of **Greenock** (Renfrewshire), and still lower, where the shores of the estuary are very beautiful, are situated many small towns (**Dunoon** in Argyllshire,

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[1] See p. 120. [2] Comp. Bristol, p. 112. [3] See Introd. p. 61 (1) (c).

Rothesay on the island of Bute), &c., much frequented as watering-places. On the sea-coast facing the mouth of the estuary (where it runs north and south) are the small Ayrshire seaports of **Ayr, Troon,** and **Ardrossan.** The inland towns of Paisley and Kilmarnock have been already mentioned (p. 122).

On the Solway Firth there are no towns of great importance, but **Dumfries,** on the navigable Nith, the chief town in the south of Scotland, is for the Lowlands on the Scotch side of the Solway Firth what Carlisle is for the plain on the English side—in former times a meeting-place of roads, now a railway centre. The small town of **Stranraer** in Wigtonshire is of some importance as the starting-point of a line of steamers to Ireland (Larne). The old route from **Portpatrick** to Donaghadee, though the shortest,[1] is now abandoned. It is between these two towns, however, that the submarine telegraph cable between Scotland and Ireland is laid.

IRELAND.

Ireland lies wholly to the west of Great Britain; the east coast of Ireland running, roughly speaking, from north to south, along the same meridian as the west coast of the mainland of the Highlands of Scotland.[2]

Coast-line and Seaports.—The coast-line is even more irregular than that of Scotland. So deeply do the numerous indentations run up into the land, that there is no part of the island more than sixty miles distant from the sea. As in Great Britain, the inlets are more numerous in the west than in the east, and many of them are due to the washing away of softer from between harder rocks, which now stand out in the form of peninsulas, as in the case of Pembroke Haven in Wales, and Mount's Bay in Cornwall. Hence most of the capes (**Fair Head,** in the north-east of Antrim; **Malin Head,** in the north of Donegal; **Loop Head,** in the west of Galway, at the mouth of the Shannon; and **Carnsore Point,** in the south-east of Wexford), are bold headlands like most of those of Great Britain. The most striking portion of the Irish coast is in the north of County Antrim, almost all the surface of which has had a large sheet of molten matter poured over it in a comparatively recent geological period. This sheet, consolidating into a rock called basalt, is seen on the coast in the north, where, at a point known as the **Giant's Causeway,** it has solidified into a dense array of flat-sided columns,[3] the sides of which are seen on the cliffs overhanging the sea, while their tops appear on the beach and at the sea-bottom. Their appearance is exactly like those of Fingal's Cave.[1]

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[1] The distance is 21½ miles.

[2] Area 32,500 square miles.

[3] Mostly six-sided.

The numerous bays, inlets, and harbours of the Irish coast have given rise to numerous **seaport towns**. The chief of these are naturally to be found on the east and south-east coasts, which are those most favourably situated for commerce with Great Britain.

At the head of a fine bay in the middle of the east coast, at the mouth of the **Liffey**, stands **DUBLIN**, the capital of the country. Its harbour, formerly too shallow for large ships, has been greatly improved of late years, but even yet its shipping is inferior to that of Belfast. At the mouth of the bay on the south side is **Kingstown**, the packet station in connection with the mail route by Holyhead, and the seat of most of the direct trade with Great Britain.

Dublin, the seat of the viceroy or lord-lieutenant of Ireland, is the largest town in the island, having a population in 1881 of a quarter of a million, and including suburbs nearly 100,000 more, but it is a place with few manufactures. Those for which it was formerly noted, woollens, linens, silks, and poplins, are now nearly extinct.

Further north on the small estuary of the Boyne is the unimportant seaport of **Drogheda** (Louth), a place which, though small, was formerly of some note in Irish history.[2] At one time it was surrounded by walls. At the head of the deep bay which indents the county of Louth is another small seaport, **Dundalk**, and at the end of the peninsula between that bay and the opening called Carlingford Lough,[3] stands **Greenore** (Louth), which, like the similarly situated Kingstown, has recently become well known as a starting- and landing-place for railway steamers. The narrow-mouthed and shallow **Strangford Lough**, on the coast of County Down, is of too little service to shipping to have any large towns on its shores; but the next opening, **Belfast Lough**, between Down and Antrim, takes its name from a town (**BELFAST**) which is one of the first-class seaports of the kingdom, and by far the most prosperous of all the manufacturing towns of Ireland. The chief manufactures are linen and cotton, the former fed by the flax grown in the neighbourhood and imported from Russia and other parts of the Continent. Its population, now upwards of 200,000, more than doubled in the thirty years 1851–81. **Carrickfergus**, built on a rock projecting boldly into the sea on the north of the same inlet, is noted for its oysters and its salt. The small seaport of **Larne**, at the mouth of the next opening to the north, is, like Kingstown and Greenore, chiefly a railway steamer port. It is the starting-point of the sea-route to Scotland by Stranraer.

Portrush, a few miles to the west of the Giant's Causeway, and **Coleraine**, on the Bann, are two small but busy seaports in the north of Ireland, where the principal opening is the shallow **Lough Foyle**, with the old seaport of **Londonderry**[1] at its head. This port is incapable of being reached by vessels of the larger class; but some American steamers make **Moville**, on the west shore of the lough below its shallows, a calling station on their outward and homeward voyages.

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[1] See cut, p. 117.

[2] The battle of the Boyne (1690), in which the adherents of James II. were defeated by William III., was fought four miles to the west.

[3] The Irish form of the Scotch *loch*.

Between this port in the north and Cork in the south the seaports are few and unimportant compared with the number and excellence of the natural harbours; for these harbours do not lie in a position favourable for commerce with Great Britain, and Ireland has no products capable of supporting a commerce with America, the land towards which this coast is turned.

Westport, at the head of the beautiful island-studded **Clew Bay**, on the west of Mayo; **Galway**, on the bay of the same name between Galway and Clare counties; **Limerick**, at the head of the large and important estuary of the Shannon, are the principal ports on this side; the last being the most important of the three, and also a town with considerable linen manufactures. **Tralee** (Kerry), on the bay of the same name, farther to the south-west, has also a considerable shipping trade.

Dingle Bay, the so-called **Kenmare River**, and **Bantry Bay**, in the south-west (Kerry and Cork), all due to the washing away of softer deposits from between harder rock connected with the most mountainous and one of the least productive parts of the island, are all unsuited by that very fact to become channels of commerce; but **Valentia**, on the south side of Dingle Bay, is worthy of mention as the starting place of the first telegraph cables laid across the Atlantic.

Where the coast begins to trend north-eastwards, the situation of the bays and harbours becomes more favourable.

Kinsale, on Kinsale Harbour, besides being a popular watering place, is a seat of valuable fisheries. The next opening to the east, the estuary of the **Lee**, is one of the finest natural harbours in the British Isles, and has at its head the city of **Cork**,[2] the third town in Ireland in point of population, and a busy place of export for the produce of the country round, principally butter. Its port, **Queenstown** (so named in honour of Queen Victoria in 1849), on Great Island in the harbour, is a place of call for most lines of American steamers, and the place where the mails for America are shipped by vessels bound outwards, and landed by those returning home. **Youghal** (Cork), at the mouth of the **Blackwater**, has valuable salmon fisheries. **Water-**

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[1] Historically, Londonderry is celebrated for the siege it sustained in 1689 against the adherents of James II.

[2] The population of Cork has remained nearly stationary at about 80,000 since the census of 1841.

ford Harbour, between the counties of Waterford and Wexford, is an estuary with two heads, one of which, running east to west, is the estuary of the **Suir**, and on it stands **Waterford,** a seaport occupying a similar situation to Cork, and having a similar trade. The other is that of the **Barrow,** a river flowing from north to south, on which stands the small seaport of **New Ross.** The large indentation on the east coast of Wexford (the bay which receives the **Slaney** from the north), is shallow and has a bar at its mouth, on which account the town of **Wexford** is of little consequence as a shipping centre, while **Wicklow,** on a small creek between Wexford Harbour and Dublin Bay, under the protection of the bold promontory of **Wicklow Head,** is chiefly notable as the place of export of the lead and iron pyrites obtained in the neighbouring mountains.

Surface.—The surface of Ireland presents much fewer interruptions to communication than that of the larger island to the east. It has many mountains rising to upwards of 2,500 feet in height, a few to above 3,000 feet; but these mountains are almost all scattered round the island near the coast, and are nowhere gathered into assemblages as dense as those met with in Scotland, Wales, and even the North of England. **The greater part of the interior of the island is a plain,** about half of which is under 250 feet in height, and the same character extends to the coast in the middle section of the island. In this plain the principal interruption is presented by the **Slieve Bloom Mountains,** a range of hills little over 2,000 feet in height, lying between King's and Queen's Counties, and important as forming part of the watershed between the basins of the Shannon and Suir. Altogether Ireland has a considerably lower average height than any other part of the British Isles.[1]

With regard to the **general direction of the mountains** of Ireland, it is worthy of note that, except in the south-west, most of the short ranges trend from south-west to north-east—a direction similar to that of the mountains of Scotland and North Wales, which belong to the same geological period. Among these mountains may be mentioned those of Donegal and those of the wild region of **Connemara** (in the south of Clew Bay —Mayo and Galway), which correspond to the mountains of the Scottish Highlands, and those of Wicklow, which correspond to the mountains of North Wales. On the other hand, in the south-west of Ireland, the **Macgillicuddy Reeks** in Kerry (with

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[1] The average height of Ireland has been estimated at about 400 feet; that of England at about 600 feet.

Carntual,[1] the highest point in the island), the **Knockmealdown Mountains**, between Cork and Waterford, and the other mountains in that region, have an east and west direction like the mountains in the same latitudes in South Wales. The rivers of the same part of the island all have the same general direction for a portion of their course, but all of them make a remarkable bend to the south before emptying themselves into the Atlantic on the southern coast.

One consequence of the remarkably level surface of Ireland is that a large part of it consists of **peat and other bogs.** The rains (which are here more abundant on the whole than in Great Britain[2]) are less quickly carried off than in the latter island, and soak into the ground, producing great stretches of land which are barren and uncultivable from their excess of moisture. One vast bog, the **Bog of Allen**, in King's County and Kildare, covers an area larger than the entire county of Dublin, but the bog is interrupted by strips of dry cultivable land. Altogether nearly a tenth of the surface of Ireland is occupied by bog. The western counties suffer chiefly in this respect. In the province of Connaught not much less than a fifth of the entire area is now occupied by bog, and most of the counties bordering on the Atlantic have at least 100,000 acres (equal to the county of Rutland) in this condition. Where cultivation is neglected the ground in many places quickly returns to the condition of bog and marsh, and hence in recent years the area so described has been increasing.

But while the level character of the surface has this disastrous consequence, it has also one great advantage, inasmuch as it has facilitated the construction not only of railways, but also of canals, which latter means of communication take a much more important place in the internal trade of Ireland than they now do in the sister island. The **principal canals** are those connecting the seaports of the east with the Shannon, the great navigable river of the middle and west, and in constructing them advantage has in some cases been taken of some of the numerous large lakes with which the plains of Ireland are studded in the north and west. The **Shannon** itself, the longest river not only in Ireland but in the British Isles, in flowing southwards traverses three considerable lakes, **Loughs Allen, Ree, and Derg** (the two latter larger than any in Great Britain), and in its course between them is a broad sluggish stream. After leaving Lough Derg it descends with a rapid fall to Limerick, so that this part of the river is rather difficult of navigation. With Dublin the Shannon is connected by two canals, the **Grand Canal**, running east and west, across the middle of the island, and the **Royal Canal**, which has a more northerly course from Dublin, joining the Shannon about the middle of County Longford. Belfast again is connected by a south-westerly canal with **Lough Neagh** (more than five times as large as Loch Lomond); that lake, with **Lough Erne**, and through Lough Erne with the Shannon. The Shannon has been made navigable to the head of Lough Allen partly by artificial means (canalisation). A branch of the Grand Canal proceeds to **Athy** (Co. Kildare), the highest point to which the Barrow is navigable for barges.[1]

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[1] A little more than 3,400 feet high.

[2] Comp. p. 75.

Geologically the rocks of which the surface of Ireland is composed are mainly as old as those of Scotland and the West of England. There can be little doubt that at a remote period a large part of the surface was covered with the coal measures which are so important a source of wealth in England, Wales, and Scotland; but from Ireland they have for the most part been worn away. Hence the rock which covers most of the plains of Ireland is a limestone similar to that which lies below the coal measures of England, and, like the English limestone (and limestones generally), it is full of caverns and underground river-channels.[2] Of the **coal-fields** which are found in Ireland, the principal is that of the province of **Leinster** (in Kilkenny, Carlow, and Queen's County); but the products of the mines of this district are not of sufficient value to have given rise to one important town, and, indeed, throughout the interior of Ireland there is not a single town that can compare in population with the chief towns of England and Scotland. There are few spots, moreover, in which coal is found along with iron, which adds so much to the value of some of the coal-fields of Great Britain. The produce of the copper mines, which was once considerable, has now dwindled away almost to nothing.

The dearth of coal and iron is one of the chief causes of the backward state of Irish **manufacturing industries** ; the only one of which now possessing a high degree of importance is that of linen in Belfast and other northern towns.[1] The principal products of Ireland are those of her **agriculture** and **fisheries.** Even these industries, however, are in a backward state. The cultivators are mainly holders of very small farms and too poor to engage in the productive but expensive mode of farming pursued in England and Scotland. The **rearing of cattle** and other live stock, and consequently the production of **dairy produce** (butter and cheese), receive more attention than the growing of crops, and much more in recent years than formerly. Among the crops

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[1] See Introd. p. 61 (2) (*d*).

[2] See p. 110 *n.* 2, and cut on p. 132.

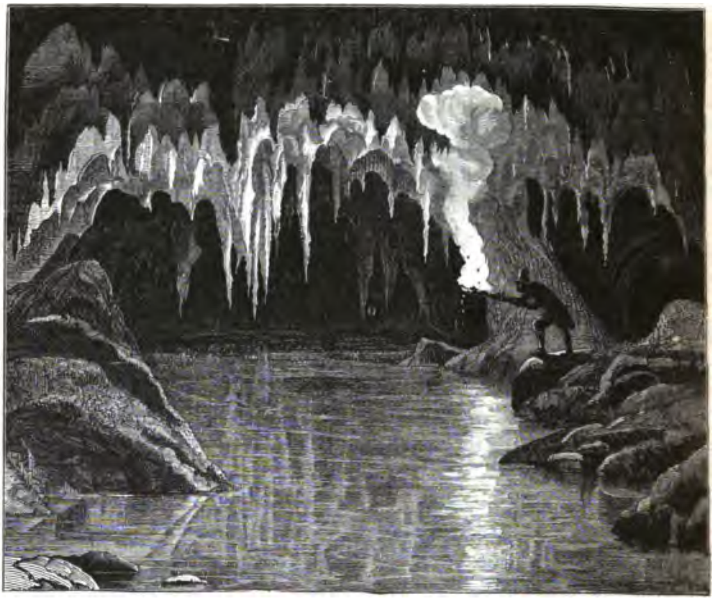

FIG. 21.—THE UNDERGROUND PASSAGE OF THE MASK BETWEEN LOUGHS MASK AND CORRIB : STALACTITES HANGING FROM THE ROOF.

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[1] Ireland was noted for its woollen manufactures as early as the fourteenth century, and fine woollen fabrics made in Ireland were exported even to Italy and Spain. The manufacture continued to flourish down to the seventeenth century, but at the end of that century was crippled and almost destroyed by an Act of William III., imposing heavy duties on woollens exported from Ireland with the view of preventing Irish fabrics from competing with those of English make.

of Ireland, oats and potatoes are the most important;[1] but in the north there is one, namely, **flax**,[2] which is a specialty of this island as compared with Great Britain. The **fisheries** produce immense quantities of mackerel, herring, and cod, but might yield much greater quantities if there were sufficient means for taking this perishable commodity quickly to the markets of England and Scotland.

The **people** of Ireland are mainly of Keltic origin, and a Keltic dialect is still largely spoken in the south and west. The earliest English settlements were made in the east, where a strip varying in extent was long known as the **English Pale**; but the chief settlements by people of English and Scottish races were made in the north (the province of Ulster), under James I. of England, who divided the land there among a number of English and Scottish settlers. These were Protestants, whereas the bulk of the Irish people (at present about three-fourths) have always remained adherents of Roman Catholicism, and hence in Ireland there is a more bitter feeling between Protestants and Roman Catholics than now exists in Great Britain. It is almost solely among the former that loyal supporters of the British Government are to be found. The great body of the people of that country have long been discontented with British rule, and the various measures that have been passed in recent years[3] with the view of conciliating the Irish have not yet had that effect.

Divisions.—From an early period Ireland has been divided into four **provinces**, and these again are sub-divided into counties. The provinces are Ulster in the north, Leinster in the south-east, Munster in the south-west, and Connaught in the north-west. Of these Ulster has the densest and most prosperous population (upwards of 200 to the square mile); the density decreases in the order in which the provinces are mentioned, so that in all nearly three-fifths of the population belong to the east half of the island. The following are the names of the counties belonging to the different provinces:—

1. **Ulster.**—On the coast: Donegal, Londonderry, Antrim, Down. Inland: Tyrone, Fermanagh, Cavan, Monaghan, Armagh.

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[1] See p. 75.

[2] Comp. Belfast, p. 127.

[3] Among these is an Act establishing courts for the fixing of the rent of land held for farming in case of disputes between landlord and tenant.

2. **Leinster.**—On the coast: Louth, Meath, Dublin, Wicklow, Wexford. Inland: Longford, Westmeath, King's County, Queen's County, Kilkenny, Carlow, Kildare.

3. **Munster.**—On the coast: Waterford, Cork, Kerry, Limerick, Clare. Inland: Tipperary.

4. **Connaught.**—On the coast: Galway, Mayo, Sligo, Leitrim. Inland: Roscommon.

Among the small towns of the interior of Ireland a few are worthy of special note. **Armagh**, in the county of the same name (prov. Ulster), is the seat of the primate of the Anglican Episcopal Church, which, till 1869, was the established church of Ireland. It also possesses a Roman Catholic cathedral, and in early times (from the sixth to the ninth century), when the Angles and Saxons were still engaged in making the kingdom of England, and the whole of the continent of Europe was in a disturbed state, it was the chief seat of Christian learning in Europe. **Enniskillen** is a finely situated town, with linen manufactures, in Fermanagh (Ulster), on the narrow strait between Upper and Lower Lough Erne. **Clonmel** (Tipperary, prov. Munster), is a considerable town on the Suir, and **Kilkenny** (prov. Leinster), the most important town on the Nore, a tributary of the Barrow. **Cashel**, in Tipperary, now a small place, was at one time the residence of the Kings of Munster. **Maynooth**, in the north of Kildare (prov. Leinster), is the seat of a celebrated Roman Catholic college.

FRANCE.

Approximate latitudes: (Dover) north point of France (Leipzig), 51° N.; Paris, Nancy, 49°; Rochefort, Mont Blanc (Trieste), 46°; middle of Pyrenees (Balkan Mountains), 43°.

Approximate longitudes: Cape La Hague, mouth of Loire, 2° W.; Havre 0°; Nancy, Toulon, 6° E.

France is a country rather more than twice as large as Great Britain, lying between the Atlantic and the Mediterranean, separated from Spain on the south by the Pyrenees, from Italy in the south-east by the Alps, from Switzerland mainly by the Jura, but requiring to be defended by numerous fortresses on the north-east on the side of Belgium and Germany.

Its **Mediterranean coast** is steep and cliffy in the east, where the spurs of the Alps advance farthest to the south, but low, flat, and dangerous in the west, where currents from the Italian seaboard cause the deposition of sediment, which has led first to the formation of rows of flat islands in front of the coast, and in many places afterwards to the union of the islands with the land. Similarly, on the **coast facing the Bay of Biscay** a current from the north of Spain is constantly depositing sandy sediment, which the winds and tides have built into a long string of sand-dunes, behind which is a row of small lakes called *étangs*. The sand from these sand-dunes[1] at one time invaded a great portion of the flat country beyond (**The Landes**). Only about a hundred years ago was the first attempt made to arrest its progress by plantations of pines. A remarkably uniform coast without harbours, except at the solitary break in the chain of downs formed by the basin of **Arcachon**, extends as far north as the estuary of the **Gironde**, after which follows another stretch of low coast, where the sea has severed some flat fragments from the land, forming small islands (**Oléron, Rhé**), and has formed a number of shallow lagoons used for the production of **sea salt**. From the mouth of the Loire northwards round Brittany, the western peninsula of France, granite cliffs with numerous indentations form the coast line. Round Normandy, the peninsula to the north-east of Brittany, the coast line is varied in character until we come to the mouth of the Seine, and there then follows a line of chalk cliffs extending as far as the mouth of the Somme, and answering to the chalk cliffs of the English coast opposite. Beyond the Somme begins a chain of downs forming a coast line similar to that which is continued all round the west of Belgium and Holland.

The **surface** of France resembles that of Great Britain in being mainly highland in one part and mainly undulating lowland in another, with comparatively small areas of level plains; but the chief highlands of France are as far removed as possible from those of Great Britain, the lowlands intervening in both countries. There are other points of contrast. The chief highland region of France is a broad plateau known as the **Central Plateau**, although it lies in fact more to the south-east, its eastern and highest part advancing close up to the valley of the Rhone. Its general height is upwards of 3,000 feet, and hence higher than most of the summits of Great Britain. The highland area next in importance occupies the north-east of the country, and a smaller and lower highland area fills the peninsula of Brittany.

But notwithstanding the great differences in physical features,

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[1] See Introd., p. 25, and p. 142 *n*. 5.

France is admirably adapted to form a single country, for its plains, where the population is chiefly congregated, are all in free communication with each other by means of depressions lying between the mountains and highland areas. The depressions are low enough to have permitted the cutting of **canals** through them to connect the chief river basins, and **the situation of these canals throws much light on the physical features of the country.** (1) **The Canal du Centre**, the highest level of which is about 1,000 feet above the sea, connects the basin of the Loire and Rhone (through the Saône), traversing the depression which forms the northern boundary of the Central Plateau; (2) **the Canal du Midi**, the highest point of which is little more than 600 feet, connects the Garonne with the Mediterranean Sea, traversing the depression in the south of the Central Plateau; (3) **the Burgundy**[1] **Canal**, connecting the basins of the Seine and Rhone, marks a relative depression in the north-east highlands, but its highest level is upwards of 1,200 feet above the surface of the sea and is in a tunnel below the highest point of the ridge here crossed. (4) A fourth canal connects the valley of the Rhine with that of the Rhone, passing through what is known as the **Burgundy Gate**, between the south end of the Vosges and the north-west flanks of the Jura Mountains, at the height of about 1,150 feet above sea level. The importance of this 'gate,' as affording a passage, both for commerce and for war, between France and Central Europe, is now likewise shown by the railways crossing it, as well as by the fortresses erected for its defence (**Belfort**, **Besançon**, the latter being the ancient Vesontio, a stronghold of the Sequani even in the time of Julius Cæsar).

The general slope of the **Central Plateau** is towards the west and north-west, where it descends in terraces which gradually merge in the French lowlands. Its east and south-east borders are much more abrupt, and along the south-east, its edge, overtopped here and there by isolated peaks rising to nearly twice the general height of the plateau, presents when seen from the valley of the Rhone the appearance of a range of mountains, to which has been given the name of the **Cevennes**. On this plateau the **Loire**, the chief river of France, takes its rise in two large head-streams (the **Loire** to the right and the **Allier** to the left), which flow northwards in deep valleys; and the fact that these two great valleys, containing the most densely populated parts of the plateau, open out on the most important part of the French plain, is another circumstance of great consequence in promoting the unity of the French people. Round **Clermont** the Valley of the Allier expands into a broad upland plain, the **Limagne,** one of the most richly cultivated districts in France, a district the fertility of which is all the more striking from the contrast it presents to the desolate tablelands adjoining. Of these tablelands, that on the west, forming the **Plateau of Auvergne,** is one of the wildest parts of France, and at the same time one of the most remarkable in its scenery, being crossed from north to south by a line of long extinct volcanoes (**Puys**), the craters of which are still in most cases quite distinct.

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[1] See p. 143.

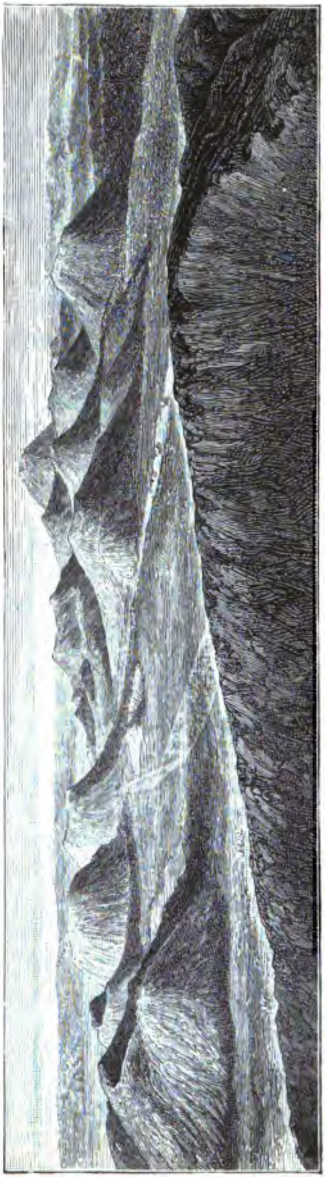

Fig. 22.—View of the Monts Dôme from the Summit of the Puy Chopine, Auvergne.

The **northern highlands** of France are under 1,500 feet in average elevation, and are generally also plateau-like in character. The heights between the depression marked by the Canal du Centre and that marked by the Burgundy Canal take the name of **Côte d'Or** (Gold Coast), from the fact of having their eastern flanks clothed with the rich vineyards that produce Burgundy wine. To the north lies the **Plateau of Langres**, which is connected with the Vosges by the **Faucilles**, a sickle-shaped ridge, concave on the south. Further north follow the Ardennes, once a vast forest, of which the chief relic is the **Forest of Argonnes**.

The **western highlands**, those of Brittany and the west of Normandy, are under 1,000 feet in average height, and are not so much plateau-like in character, but rather like the highlands of Britain, a succession of ridges running in all directions and opening into one another.

For an account of the frontier mountains of France, see ALPS, SPAIN, and SWITZERLAND.

Of the **plains** of France, the **rivers** are the most important features. The fact that the French highlands lie so far from the sea allows most of the principal rivers to develop into considerable streams with a gentle current in the lower tracts of the country. They are hence of great importance for inland navigation, as might be inferred from what has been already stated as to the connection of the principal river-basins by means of canals. The **Loire** is navigable for between 400 and 500 miles (about twice the entire length of the Thames or Severn). The **Seine** and its principal tributaries (**Marne, Yonne**) are also navigable far into the interior, and it is by means of an affluent of the Yonne that the Seine basin is connected by canal with the Saône and Rhone. The **Rhone**, flowing, unlike the other great French rivers, in a narrow valley, but amply fed by mountain torrents (on the east glacier streams), is full-flooded but impetuous, and hence, though navigable for large vessels from Lyon downwards, cannot be easily ascended. Since the opening of the Lyon and Marseilles railway, the navigation has dwindled away to a comparatively small amount. The gently flowing Saône, the tributary which the Rhone receives on the right from the Burgundian Plateau, is a marked contrast to the main stream. Altogether France has about a hundred navigable rivers, most of which have their entire course within her frontiers.

The **climate** of France exhibits the mitigating influence of the Atlantic, and its warm winds and currents in the west, but less in the east, where there are greater extremes. Hence, while the coast of Brittany has a winter mild enough for camellias, Chinese bamboos, and other plants belonging to a sub-tropical climate, to flourish in the open air, but a summer too cold and damp to be favourable to wheat cultivation, farther east, in the same latitude, the warm summers mature the fruit from which Champagne wine is made, though the winters are cold enough to kill even the holly and the gorse.

Of the **agricultural products, wheat** is, as in England, the principal cereal, but to the crops of England France adds, in the warmer parts, **maize, wine,**[1] **sugar-beet, tobacco,** and in the Mediterranean provinces the **olive** and **mulberry** (the latter for the rearing of silkworms). Wine is of special importance, for France is the greatest wine-producing country in the world. The chief wine-growing districts are the valley of the Garonne in the south-west, and Champagne and Burgundy in the east. The pastures are not so rich as those of the British Isles, and hence live-stock has to be imported. Horses are specially deficient, and in Central France field labour is generally performed by oxen, in the south by mules. The majority of the cultivators of France own the land which they till.

The **mineral wealth** of France is relatively small. There are **two chief coal-fields.** In the north the Belgian coal-field extends into France, and, being rich in iron, supports a dense industrial population, gathered into large towns.

Of these the chief are **LILLE, Roubaix, Tourcoing** (the two latter of recent growth), all chiefly engaged in spinning and weaving. Cottons and linens are the chief manufactures of Lille, woollens of Roubaix, and curtains and carpets of Tourcoing. The other coal-field, also rich in iron, is on the eastern borders of the Central Plateau, and the chief towns belonging to it are **St. Etienne** and **Creuzot.**

The former is not only itself a large manufacturing town, producing chiefly hardware and silks, but also supplies with coal the still more important manufacturing town of **LYON** (350), the first town in Europe for the manufacture of silk and velvet fabrics, which are especially famous for the tastefulness of their patterns.[2] The deficiency of France in coal is made up by imports from Belgium and England.

The **people** of France are mainly of Keltic origin, but during four centuries of Roman domination were so completely Romanised that a Keltic dialect is now spoken only in a part of Brittany,[1] and the Latin language, altered by degrees into the modern French, has spread over almost the entire country. The Roman domination was overthrown in the fifth and sixth centuries by Teutonic invaders (**Western Goths** or **Visigoths** and **Franks**), but these settled among the civilised subjects of Rome, and in the end adopted their language. At the end of the eighth century a Frankish king, Charlemagne, extended his sway eastwards beyond France as far as Bohemia, and southwards as far as the Ebro; but his dominion did not survive him, and during the Middle Ages France was little more than an assemblage of independent principalities, nominally united under one king. This state of matters favoured the settlement of Normandy[2] by the **Normans** (Danes and Norwegians) in the tenth century, and the English conquests in the fourteenth and fifteenth centuries; and not till after the English were finally driven out did the French monarchy become strong. The fiefs or practically independent principalities became **provinces** of the French kingdom, and though these provinces are not now recognised, some of their names are still familiar, as applied to well-marked districts. Since the Revolution at the end of last century, France has been divided into **departments**, of which there are now eighty-seven. At the same time France exchanged a monarchical for a republican form of government, and though there have been several changes since then, the **government** has been **republican** since 1870. The **religion** is Roman Catholic. Elementary **education** is in a backward condition.

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[1] Wine, silks, and woollens make up the bulk of the exports of France.

[2] Lyon is the birthplace of Jacquard, the inventor of an ingenious loom for the weaving of patterns in silk and other fabrics.

Towns and Districts.—1. The Northern Plains (basin of the Somme and greater part of that of the Seine), an agricultural and industrial region, which derives great advantage for its commerce from its vicinity to England.

The great industrial towns of the north have already been mentioned. Of the coast towns, **Calais**, **Boulogne**, and **Dieppe** are chiefly important as points of departure and arrival on different routes between France and England, their harbours not admitting vessels of the largest class. Calais is interesting to the people of this country also as being the last place on the French mainland held by England

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[1] This dialect is called *Armorican*, from the ancient name of Brittany.

[2] In Normandy some of the suffixes common in the names of English towns of Scandinavian origin reappear under different forms. For example, *-by* appears under the form *-bœuf*, as in Quittebœuf (the Norman equivalent of the English Whitby), *-toft*, under that of *-tot*, as in Yvetôt.

(lost only in 1558). **LE HAVRE**, or Havre (that is, 'the port'), at the mouth of the Seine, founded by Francis I. (sixteenth century), is the chief French seaport on the west coast, the starting point of the French telegraph cable to America, and the chief seat of the French trade with that continent, whence it imports cotton and some other materials of French industry, as well as articles of food. **ROUEN**, the former capital of Normandy, higher up the Seine, can be reached by smaller sea-going ships, and hence is to some extent a seaport of Paris, while at the same time it, with the surrounding towns, is a great seat of cotton manufactures, and thus is for Havre on a small scale what Manchester is for Liverpool. Still higher up, just below the junction of the Seine and Marne, stands **PARIS**, the capital of the country, in the centre of northern France, and at the meeting-place of the two chief roads to the south,[1] the one by way of the valley of the Rhone, and the other crossing at Orléans and Poitiers, the depression separating the Central Plateau from the highlands of Brittany.

Originally built on a small island in the middle of the river (now the heart of the city), it at present occupies both banks and contains 2¼ millions of inhabitants, second to London alone among the cities of the world in point of population. Its exposed situation renders defensive works necessary, and, besides being surrounded by a strong wall, it is protected by a ring of forts extending a considerable distance into the country round. Famous all over the western world as the centre of fashion and elegance, it is in France without a rival in influence, the focus of all the best intellect and energies in the country, and the originator of all the movements by which the destiny of the people is decided. W.S.W. of Paris is **Versailles**, formerly a favourite residence of the French kings, from Louis XIV. downwards.

2. Lowlands of the Loire basin with Brittany and western Normandy, a district without important industrial towns, but containing many towns of historical celebrity. On the deeply indented rocky coast of Brittany, the inlets, though like those in the West of Ireland, Wales, and the Scottish Highlands, too far removed from the seats of agricultural, manufacturing, and mining industry to serve as seaports, are well suited for naval stations, of which there are two on these coasts—**Lorient** on the south, and **Brest** on the west (the Plymouth and Portsmouth of France). On the less favoured coast of Normandy another great naval station has been constructed at great expense at **Cherbourg**, on the small bay in the north of the western peninsula facing the south coast of England. The coasts of Brittany abound in fish (sardines, &c.), and the fishermen are the hardiest seamen in France.

There are two seaports at or near the mouth of the Loire: **NANTES**, 30 miles from the mouth, the elder of the two, now, in consequence of the silting of the river bed, accessible only for small sea-going ships, and hence superseded for large vessels by **St. Nazaire**, at the mouth.[1] Higher up the Loire valley are **Angers**, on the Maine, the capital of the former province of Anjou; **Tours**, on the Loire itself, capital of that of Touraine, 'the garden of France;' and **Orléans**, capital of the much less fertile Orléannais, yet a larger town than either of the others in consequence of its favourable position, (1) at the bend of the river Loire, and (2) at the point where the river is crossed by the highway from Paris to the south-west[2]; **Poitiers**, on the Vienne, a tributary of the Loire on the left bank, capital of Poitou, an old and old-looking town, long important on account of its position on the same highway. Higher up the same tributary, on the skirts of the Central Plateau, stands the considerable town of **Limoges**, capital of the old province of Limousin.

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[1] See Introd. p. 61 (3).

3. **South-western France** (greater part of the Garonne basin, with those of the Charente and Adour). The principal old provinces of this region are Guienne,[3] on both sides of the Lower Garonne, and Gascony, in the south-west, named after the Basques,[4] a small remnant of whom still occupy the extreme south-west corner.

In the northern part of this region there are no towns with more than 50,000 inhabitants, not even the fortified coast towns of **La Rochelle** and **Rochefort** (the latter a naval station); but at the head of the estuary of the Gironde, formed by the union of the Garonne from the Pyrenees, and the Dordogne from the Central Plateau, stands **BORDEAUX** (220, the ancient *Burdigala*), the third seaport in France, the place of export of the claret of Médoc and other wines grown in the surrounding country. Here also, however, has arisen lower down a seaport for larger steamers, **Pauillac**, on the left bank of the Gironde.

The tract on the coast south of the Gironde is the flattest in France, and one of the most unhealthy and least populous,[5] though it has increased in population and salubrity within the last generation, since it has been drained by a well-constructed system of canals. Formerly the population consisted mainly of shepherds, who tended their scattered flocks on stilts.

The fortress of **Bayonne**, at the mouth of the Adour, is said to have given name to the bayonet (though this is not certain). **Pau**, at the base of the Pyrenees, on a rapid Pyrenean tributary of this river, called the Gave de Pau, is celebrated as a resort for invalids.

4. **The North-eastern Highlands** (part of the Meuse and Moselle basins, and those of the head-waters of the Seine).

In the extreme north-east is the portion of the province of Lorraine left to France after the Franco-German war, with the fortified towns of **Verdun** and **Toul**, and the considerable manufacturing town of **Nancy**. To the west lies the province of Champagne, the greater part of which has a chalky soil, which, like that of the Marlborough Downs, is suited for little but sheep pastures, and hence supplies wool to the woollen manufactories, which are the source of the present prosperity of the historically celebrated town of **Reims** (where the French kings used to be crowned). The western slopes of the hills in this province are planted with carefully tended vineyards producing the famous wine, the trade in which is centred at **Epernay** and at **Châlons-sur-Marne.**[1]

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[1] See Introd. p. 61 (1) (*c*).

[2] See Introd. p. 61 (2).

[3] A corruption of the ancient *Aquitania*.

[4] See Spain, p. 198.

[5] In the north of the department of Landes and the south of that of Gironde there is an area equal in size to the county of Devon in which the population is less than 50 to the square mile—lower than in any county in England or Wales.

5. The Central Plateau, for the most part bleak ,unproductive, and thinly peopled, especially in the south, has no considerable towns except those already mentioned (**Clermont,**[2] **St. Etienne,**[3] **Creuzot**[3]). Here the Arverni, who give name to the province of Auvergne, offered a stubborn resistance to the Romans, and in the Middle Ages and down to the second half of the seventeenth century numerous practically independent barons occupying strong castles defied the authority of the kings. At present the Auvergnats, a frugal honest race, are chiefly known, like the inhabitants of Savoy and other mountainous districts, for their habit of migrating to the richer provinces of France to earn a living, but always returning when they can to their unproductive but much-loved homes.

6. Valley of the Saône and Rhone and Mediterranean Region.—The northern part of this section of France (one of the most populous in the whole country) once formed the nucleus of the Duchy of Burgundy with the Franche Comté, the former of which was united to the kingdom of France towards the close of the fifteenth century, the latter not till two centuries later.

Dijon, where the Burgundy Canal quits the vineclad slopes of the Côte d'Or, is the centre of the trade in Burgundy wine. **Châlons-sur-Saône** is a place of some importance in consequence of its situation at the point where the Canal du Centre communicates with the Saône. On the Doubs, a tributary of the Saône, stands **Besançon**, on the flanks of the Jura, a town in which watchmaking is the chief business, as it is in other towns within the Jura. Lower down there are on the Rhone, besides Lyon, **Avignon** and **Arles**, and a little to the west of the right bank **Nismes**, the last two, under the names of *Arelate* and

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[1] The province of Champagne containing the first extensive plains that have to be traversed by an army entering France round the northern end of the Vosges possesses numerous battle-fields. The plain round Châlons, the very first to be crossed, is the *Catalaunian Plain* on which Attila king of the Huns was defeated in a tremendous battle, by the Roman general Aëtius (451 A.D.)

[2] See p. 137. [3] See p. 139.

Nemausus, important towns in the ancient *Provincia*[1] (Provence), and interesting on account of their Roman remains; on the Isère, a left-bank tributary of the Rhone, **Grenoble** (see ALPS). West of the Lower Rhone the greater part of the region once formed the province of **Languedoc**, the chief towns in which are the long celebrated **TOULOUSE**, on the Garonne, near the junction of the Canal du Midi, and near the coast, **Montpellier**, with a celebrated school of medicine founded by Arabs.[2] **Narbonne**, farther to the south-west on the same coast, was an important seaport in ancient times, but has lost its value in this respect owing to the deposits of sediment already mentioned. The still important seaports of the Mediterranean coast are confined to the east, and among these is the greatest and oldest of all French seaports, **MARSEILLES** (270), the ancient Massilia, a town which was founded by a Greek colony in the eighth century B.C., on a fine bay as near as possible to the delta of the Rhone,[3] and speedily developed into a great seaport on account of its situation at the end of the only convenient route connecting north Europe[4] with the western half of the Mediterranean. Farther east is the almost impregnable fortress of **Toulon**, with a naval station; and under the shelter of the spurs of the Alps are the mild health resorts of **Cannes**, **Nice**, and **Mentone**, and between the two latter **Monaco**, the capital of a nominally independent principality less than ten square miles in extent. The unsheltered parts of this coast are exposed to a hateful scourge in the form of a bitterly cold wind, known as the **mistral**, which sweeps down from the cold plateau on the north-west, or the icy summits of the Alps in the north and north-east. At Marseilles it blows on an average for nearly half the number of days in the year.

The highly mountainous island of **Corsica** (about eleven times the size of Anglesey) has several summits between 8,000 and 9,000 feet in height, and is thinly peopled by an Italian-speaking population.

It has two small coast towns, **Bastia** in the north-east, and **Ajaccio** in the west, the latter celebrated as the birthplace of Napoleon Bonaparte.

BELGIUM AND HOLLAND OR THE NETHERLANDS.[5]

(With the Grand-Duchy of Luxemburg.)

Approximate latitudes: (Birmingham), Amsterdam (Berlin), 52½°; Antwerp (Leipzig), 51°.

Approximate longitudes: south-west point, 2½° E.; north-east frontier, 7° E.

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[1] So-called as being the first Roman *province* formed in France (*Gallia transalpina*).

[2] See Spain, p. 195 *n.* 1.

[3] On the marshy and unhealthy delta itself there is no suitable site for a seaport.

[4] Through the Burgundian Gate.

[5] Kingdom of the Netherlands is the name given by the people of that kingdom

The south-east portion of the territory forming these two countries belongs to the highlands of Central Europe, and attains an elevation of from 1,500 to 2,000 feet. Thence the surface gradually sinks towards the west and north, till it forms the lowest part of the European plain. A large area in the west even lies below sea-level. At one time the **chain of downs** which begins in the north-east of France and ends on the west coast of Jutland was continued right round the coast of Belgium and the Netherlands, being only broken by the mouths of the Rhine, Maas, and Scheldt; but the land here subsiding enabled the sea to break in and convert the deltas of these rivers into a network of sea-channels. Farther north, the sea in the thirteenth century bursting in through the downs now forming the islands of **Texel, Vlieland,** &c., brought a lake which then occupied the south-eastern part of the present **Zuider Zee**[1] into

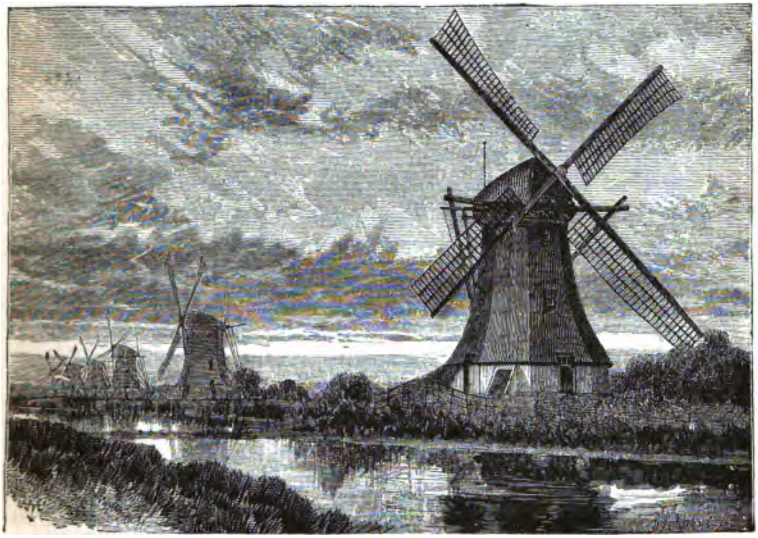

Fig. 23.—Windmills for the Draining of a Polder at Zaandam, North Holland.

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to the country which we call *Holland*, the latter name being applied by them only to two low-lying provinces in the west (provinces which, however, contain the bulk of the population). Formerly the name Netherlands included most of the provinces of both Holland and Belgium of the present day.

[1] Pronounced *Zoider zā*, Dutch = 'South Sea.'

connection with the ocean, and spread over a large area that intervened. Little of the land then lost has since been recovered; but in the west, where the submerged area was overspread with deposits from sea and river, fitting the ground when drained for rich pasture lands and fertile corn-fields, a district equal in extent to the county of Sussex (about 1,450 square miles) has been added to the land surface of the country since the sixteenth century. All this part of the country, as well as other low-lying tracts subject to occasional flooding, are divided up into sections called **polders**, enclosed by **dykes**, or artificial embankments, and drained by pumping machinery. This machinery is mostly driven by windmills, for the flatness of the country and its proximity to the sea enable the winds to blow over it with the same steadiness as over the ocean, and thus to form an unusually serviceable source of power.

The chief **rivers** of Belgium and the Netherlands all have their sources outside the boundaries of these countries. The Rhine, entering from Germany on the east, soon divides into two branches, that on the right retaining the name of the **Rhine**, while that on the left receives the name of **Waal.** The former gives off on the right two small branches (the second of which again divides), while the main stream is continued under the name of the **Lek.** The **Waal** ultimately unites with the **Maas**, and this name is henceforth applied to the single stream, which lower down receives the Lek also.

The **Maas** (French, *Meuse*) enters Belgium on the south from France, receiving thence also its largest tributary, the **Sambre,** on the left, and before joining the Waal describes a semicircle to the east; a similar curve is described by the other principal river, the **Scheldt** (Fr. *Escaut*), which also enters on the south from France, and also receives from the same country on its left bank an important tributary, the **Lys.**

The union of the Maas and Rhine constitutes in one way a peculiar danger for the Netherlands, since the fine mud which they carry down from the higher parts of their course is steadily deposited in the sluggish reaches near their mouth, where accordingly the bed of the united rivers is constantly being raised higher and higher, the surface ever nearer the tops of the embankments, which thus have from time to time to be raised in height. To remedy this it is now proposed to dig a new channel for the Lower Maas, so as to prevent its union with the Rhine. (See Introd. pp. 27–8.)

In other respects the rivers, of the Netherlands especially, are of extreme value, for they are not only themselves navigable channels, but their height above the land makes it peculiarly easy to feed **navigable canals** by their means, and all the chief dykes have canals as well as roads running along them. Canals are numerous even in the cities.

The **density of the population** is high in both countries. In Belgium[1] it is higher than in any other country in the world except Saxony, which is only half the size. In both countries this high density is due in part to the same causes, the advanced condition of **commerce and agriculture.** The Dutch[2] in particular are a nation of merchants, and the value of the foreign commerce per head of population is greater than in any other country in Europe. This pre-eminence is largely due to the vast colonial possessions[3] in Asia, whence the mother country derives immense quantities of coffee, sugar, rice, indigo, spices, &c., much of which is re-exported.

Agriculture is almost everywhere pursued with the greatest industry and success, though it has not in all places the advantage of a rich soil such as that of the Polders. In both countries there are large tracts where the soil is naturally unfruitful, but even these have in great part been rendered fertile by the labour of centuries. In the north-east of Belgium and south-east of the Netherlands there is, however, a large area of sandy soil which is still thinly peopled, and in the east of the Netherlands extensive peat-bogs which are only with difficulty brought under cultivation by draining the land by means of deep canals and trenches, stripping the surface of peat (for fuel) and manuring the underlying soil. Such tracts are known as **Hohe Veenen** (high fens).

In the Netherlands cattle-rearing is more general than tillage, and hence **butter, cheese, and live animals** are what that country supplies most abundantly to others out of its own resources. In Belgium, on the other hand, tillage predominates, and besides great quantities of **grain**[4] there is produced much **flax** and **beet.**

In both countries the chief grains are rye, wheat, and oats. Wine is grown in the south-east (including Luxemburg). Except wine, the Netherlands grow in smaller quantity all the products of Belgium, and in the former country the growing of vegetables and ornamental flowers (**Dutch bulbs**) is an important specialty.

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[1] Nearly 500 to the square mile. See p. 111 *n.* 4, and table, p. 320.

[2] This term, a corruption of the Ger. *Deutsch*, meaning German, was applied in this country to the Germans in the last century, as it still is in the United States, but is now applied by us to the people of the Netherlands. [3] See p. 216.

[4] Relatively to area, Belgium produces a greater quantity of grain than any other country in the world regarding which statistics can be obtained.

But besides commerce and agriculture the inhabitants depend to a large extent on **manufacturing industry**, those of Belgium also on **mining**, and it is chiefly to this cause that the extremely high density of population is due. The outer margin of the plateau in the south-east, like the margin of the same plateau in west Germany, is occupied by a rich coal-field, containing also iron, the products of which not only support large manufactories in Belgium itself, but also supply a large surplus for export, chiefly to France. The **chief manufactures** of Belgium are **cotton, linen, and woollen** goods, and **machinery**; and the chief manufacturing centres are **Liège**, on the Meuse, **Mons**, on a tributary of the Scheldt near the French frontier, and **Ghent**, at the confluence of the Scheldt and Lys. Besides coal and iron, **zinc** is also an important mineral product.

In Holland also **linen** and **cotton** manufactures are highly important, and Holland now comes next after Great Britain in the quantity of raw cotton it imports per head of population, to be made into yarn or cloth in the country. Another important mechanical industry is the building of **wooden ships**, the timber for which is floated down the Rhine from the Black Forest. Various industries are, however, pursued on a small scale, and as in draining the polders the wind is very largely made use of to drive the machinery for the purpose. Windmills grind corn, coffee, and chocolate, scutch flax and hemp, bruise oil-seeds, mash paper-pulp, and perform other operations.

To understand the great density of population in Belgium and the Netherlands, we must have regard also to the **history** of the countries. Though the absolute amount of the commerce of these regions can never have been as large as it is at present, its relative amount was in earlier times even greater. From the thirteenth to the fifteenth century the seaports of **Antwerp** and **Bruges** were the rivals in commerce of Venice and Genoa, and the development of population dates from that period. Commerce stimulated all other branches of industry. Manufactures flourished from the ease with which raw materials could be obtained from abroad, manufactured goods sent away to distant markets. Supplied with wool from England and elsewhere, Ghent and other cities of Flanders wove immense quantities of cloth at a time when English manufactures were unknown, and to meet the wants of artizans and traders the soil was cultivated with an amount of care which would have been thrown away elsewhere.

This wealth made the possession of the Low Countries or Netherlands an object of desire to many princes, and after frequently changing masters the provinces came into the hands of the kings of Spain about the beginning of the sixteenth century. About that time the Reformation movement began, and the zealous Roman Catholic king of Spain, Philip II., made every effort to prevent the adoption of Protestant principles by the people of the Netherlands. In the end, the northern provinces, which had firmly embraced **Protestantism**, acquired their independence, but the southern provinces were subjected and kept attached to **Roman Catholicism**. Both divisions ultimately became kingdoms, but their present existence as separate kingdoms dates only from 1830.[1]

The **Dutch language** is a Teutonic tongue, more closely allied to English than German is, and a dialect only slightly different (**Flemish**) is spoken by more than half of the inhabitants of Belgium, the remaining half of whom in the south (**Walloons**) speak French.

Elementary **education** is compulsory in both countries; but education generally is more advanced in Protestant Holland than in Roman Catholic Belgium.

Towns and Districts.—1. Belgium. **GHENT** (prov. East Flanders), at one time the residence of the Counts of Flanders, attained the height of its prosperity in the fifteenth century, at which date it was more populous than Paris. Its modern prosperity it owes to cotton manufactures; Ghent containing half of all the Belgian cotton spinneries. **Bruges**, in West Flanders, formerly the port of Ghent, is a declining town, and has now only interesting relics of a past glory. **Ostende**, amidst the downs of the coast, is chiefly noted as a sea-bathing place. **ANTWERP**[2] (nearly 200; in 1846, 100; prov. Antwerp) ,a little above the head of the estuary of the Scheldt, occupies a position nearly as favourable for commerce as London, and is now growing with rapid strides as a seaport. In former days it reached the height of its prosperity in the fifteenth and sixteenth centuries, declining in the seventeenth on the rise of the Dutch seaports; but it has now once more outstripped the latter, and become one of the greatest seaports on the mainland of Europe, importing the raw material not only for the manufactories of Belgium, but also to a large extent for those of the middle Rhine basin. It is strongly fortified, and is likewise noted for its fine cathedral and its art treasures. **BRUSSELS** (prov. South Brabant), near the centre of the country, at the meeting of hill and plain, with manufactures of carpets and lace, a town of comparatively modern origin, but now the capital of Belgium. Immediately to the south lies the battlefield of Waterloo. **Louvain**, in the same province, east of Brussels, is the seat of the most flourishing of the Belgian universities. In the fertile province of Hainaut is **Mons**, the neighbourhood of which is crowded with coal-mines and ironworks, and is the most densely inhabited part of Belgium. **LIÈGE**, capital of the eastern province of the same name, on the Meuse, where it begins to turn northwards, is the Belgian Birmingham, and its suburb, **Seraing**, is noted for its machinery and other iron manufactures. **Verviers**, in the same province, has important woollen manufactures.

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[1] Luxemburg is divided between Belgium and the Netherlands. The Belgian portion is a province of that kingdom, but the Dutch portion has the title of a grand duchy and has a separate government and legislative body, the King of Holland, as grand-duke, merely appointing a governor.

[2] See Introd. p. 61 (1) (*a*).

2. **Netherlands.**—In North Holland, **AMSTERDAM** (370), on the Ij,[1] a branch of the Zuider Zee, the chief commercial town in the country, first acquired importance after the revolt against Philip II. of Spain. The Zuider Zee being too shallow for shipping, a canal was constructed first of all northwards to **Helder**, opposite the island of Texel, but this has recently been superseded by another canal, which proceeds westwards to the North Sea at **Ijmuiden**,[2] and is capable of being used by the largest ships. The population includes a large proportion of Jews, among whom are many diamond merchants. **Haarlem** (prov. North Holland), a few miles west of Amsterdam, is the centre of the flower cultivation of the Netherlands. **Leiden** (South Holland) is the seat of a well-known university,[3] famous in last century for its medical school. **The Hague** (Dutch, 'S Gravenhage, 'The Count's Hedge'), also in South Holland, a few miles to the south-west of Leiden, is the political capital of the country. **ROTTERDAM** (South Holland), south-east of the Hague, on the Maas, still the chief seaport in the Netherlands, having outstripped Amsterdam when that port was not accessible for ships of a large size. **Utrecht**, in the province of the same name, important as a seat of trade and industry, first of all on account of its situation at the point where the Old Rhine[4] and the Vecht[4] diverge, the former the water-way from Germany to Leiden, the latter to Amsterdam; now a railway centre. It is also the seat of a university, and historically is noted as the place where several important treaties were concluded in 1713.

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[1] Formerly spelt Y, pronounced like the English letter I.

[2] That is, 'Mouth of the Ij:' *ui* in Dutch is pronounced like *oi* in English.

[3] Founded by William of Orange in 1575 to commemorate the heroism displayed by the inhabitants during the siege which it had just sustained against the Spaniards.

[4] The two most northerly arms of the Rhine, formed by the branching of the Krumme (crooked) Rhine.

GERMANY.

Approximate latitudes: (York), Mouth of Elbe, Lübeck, 54°; (Birmingham), Berlin, 52½°; (Mouth of Loire), southern frontier (Buda-Pest), 47½°.
Approximate longitude: 6° to 23° E.

Germany is an empire in Central Europe, rather larger in area and considerably more populous than France. It is for the most part without natural boundaries[1] in the east and west, but separated in the south from Austria and Switzerland by a series of mountains and the Lake of Constance.

The **surface** is for the most part mountainous or highland (above 1,000 feet) in the south-west, while in the north and east it is part of the great Central Plain of Europe.

If we begin our description in the south-west we notice first of all a range of mountains, the **Vosges** (Ger. Vogesen), running north and south on the left bank of the Rhine, and now forming part of the Franco-German frontier. On the opposite side of the Rhine, at the point where that river turns to the north, we observe the junction of two mountains or narrow plateaux, one of which runs north, parallel to the Vosges, the other north-east. The former is known as the **Black Forest**, from its covering of dark pines; the latter is a continuation of the Swiss Jura, and in Germany first receives the name of the **Suabian Alps** (in Würtemberg), and afterwards that of the **Franconian Jura** (in Bavaria). The direction of these latter ranges is at first nearly parallel to the course of the Danube, but opposite the bend of that river, where Ratisbon stands, becomes more northerly, the Franconian Jura advancing in that direction nearly to the **Fichtelgebirge**, in the north-east of Bavaria. From the neighbourhood of this somewhat isolated group other three mountain ranges strike off in different directions—one, the **Franconian**[2] and **Thuringian**[3] **Forests**, to the north-west; a second, the **Erzgebirge**,[4] to the north-east; and the third, the **Bohemian Forest**,[5] to the south-east. These mountains may be considered as marking off different regions of the German highlands.

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[1] By natural boundaries is meant boundaries formed by some well-marked physical feature, such as seas or mountain chains.

[2] Ger. *Frankenwald.*

[3] Ger. *Thüringerwald.*

[4] Ger. = Ore Mountains.

[5] Ger. *Böhmerwald.*

(1) The German Jura, the Bohemian Forest in the east of Bavaria, and the Alps in the south of Bavaria, enclose a triangle consisting mainly of a bleak plateau with considerable stretches of moorland. (2) A second triangle lies to the north-west of the Jura, and is bounded on the other two sides by the Thuringian Forest and a plateau of ancient slates, through the middle of which the Rhine has cut for itself a deep gorge, where it flows from Bingen towards the north-west. This triangle, drained by the **Neckar** and the **Main**, as well as the **Rhine**, is very varied in surface, but its valleys are among the most favoured parts of Germany in respect of soil and climate. Specially favoured is the flat portion of the valley of the Rhine between Mainz[1] in the north and Basel[2] in the south, and between the Black Forest and the Vosges in the east and west. (3) A third triangle looks to the north-east, bounded on two sides by the Thuringian Forest and the Erzgebirge, the latter of which slope gradually towards Germany with parallel undulations, while the third side is formed by the irregular outline of the German plain, which, in the west, begins only at the base of the **Hartz Mountains**, a somewhat isolated range, stretching parallel to the Thuringian Forest, a little to the south of lat. 52° N. This triangle is also very varied in surface, though still mainly highland. The valley of the **Weser** separates this triangle from the slate plateau in the extreme west, a plateau which is itself surmounted here and there by smaller plateaux or mountains. These are in some cases masses of granite, in others, as in the **Eifel**, north of the Moselle, on the left bank of the Rhine, ancient volcanoes like those of the Auvergne region in France.[3] Their craters now form in some cases small lakes.

Beyond the Erzgebirge, the frontier mountains of Germany again take a south-easterly direction, like the Bohemian Forest, as well as the Thuringian Forest and the Hartz Mountains, and they lie indeed in the same line with the last-mentioned range. The general name of the **Sudetes** is sometimes applied to the whole series; but the north-west section is most usually distinguished by the name of **Riesengebirge.**[4] It is opposite the Sudetes that the German plain spreads out to its widest.

The German **lowlands** are for the most part undulating.

[1] Fr. *Mayence.* [2] Fr. *Bâle.* See p. 169 *n.* 2. [3] See cut, p. 137. [4] Ger. = Giant Mountains.

Only here and there are there perfectly level tracts. The **soil** is not in general very fertile, but in the west there occurs near the coast a considerable tract, over which the sea has in former times spread a covering of rich deposits now occupied by corn-fields and meadows. This tract, which is divided up by dykes and canals like the Dutch polders, presents a marked contrast to the more barren and heathy region behind.

The outskirts of the German highlands contain nearly all the important **mineral deposits** of the country. At the foot of the Sudetes in Upper Silesia (Prussia) are found **coal**, **iron**, and **zinc**, the former of which have made this the seat of a great iron industry, of which **BRESLAU** (300), on the Oder, is the centre. The **Erzgebirge** yield silver, lead, and tin; and a rich coal-field at their base has converted this part of Germany into an important manufacturing region, the centre of which is **CHEMNITZ**,[1] the Saxon Manchester (in the kingdom of Saxony). The **Hartz Mountains**, one of the oldest mining districts of Germany, yield metals of all sorts, and the northern slopes of the western plateau furnish nearly inexhaustible supplies of coal and iron, so that this region, favoured also by its situation near the coast, and its easy access to the Rhine, is the most important of all the industrial districts of Germany, and is almost as thickly studded with manufacturing towns as South Lancashire or the south-west of Yorkshire.

The district belongs entirely to the Prussian provinces of the Rhine and Westphalia. The principal towns in it are the twin towns of **BARMEN** and **ELBERFELD**, with manufactures of silk and cotton; **COLOGNE**,[2] **Düsseldorf** (also famous for its school of painting); **Aachen**,[3] chief seat of the German woollen manufactures; **Krefeld**, chief seat of the silk manufactures; **Dortmund** and **Essen**, the chief centres of the coal and iron industry of Germany, the latter with the vast iron and steel works of Krupp; **Bonn**, on the Rhine, more celebrated as the birthplace of Beethoven than as a manufacturing town.

Besides the minerals already mentioned, **amber** is still an important product on the eastern shores of the Baltic.[4] **Salt** is obtained in various places; and besides common salt, there are produced at **Stassfurt,** in Prussian Saxony, great quantities of potash salts, which form a valuable manure.

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[1] It is worthy of note, however, that in the kingdom of Saxony the textile and other manufactures are not so much centralised in large towns as in other great industrial regions, but are distributed over a crowd of small towns and villages.

[2] Ger. *Köln*, both forms being corruptions of the first half of the ancient Roman name, *Colonia Agrippina*. It is famous for its cathedral, commenced in 1248, but not completed till 1880.

[3] Better known by the French name of *Aix-la-Chapelle*.

[4] See p. 164.

In other parts of Germany the people are chiefly engaged in **agriculture** and **cattle-rearing.** The chief crops are **rye, potatoes,** and **sugar-beet.** In the warmer valleys lying amidst the highlands of Central Germany, **fruit** and **wine** become important products, but more fruit than wine is grown; while further to the south-west, and especially on the hills looking down on the Rhine and its tributaries, the Neckar and the Main, wine is the staple production, and **tobacco, maize,** and **hops** also attain importance.

Forests cover one-fourth of the entire surface, and in ancient times all Central Europe appears to have been, like Britain,[1] chiefly an area of woodland and marshes.

The **rivers** of Germany, all of which, except the Danube and its tributaries, drain into the German Ocean and the Baltic, are of great value as highways of commerce, and hence have an exceptionally large number of important towns on or near their banks. The **Rhine,** the **Elbe,** the **Oder,** and the **Vistula** are navigable for all or nearly all that part of their course which lies within the German frontier. The first two, both broad and deep rivers, are specially important, and still carry enormous quantities of merchandise, notwithstanding the development of railways, and the banks of the Rhine are studded with a larger number of important towns than any other river in Europe.

Besides the Swiss frontier town of Basel, there are, on the **Rhine,** Spires, Heidelberg, Mannheim, Mainz, Coblenz, Bonn, Cologne, Düsseldorf, all within the German frontier, and to these may be added Strassburg and Karlsruhe, at a short distance from the river, in the flat valley between the Vosges and the Black Forest, where frequent inundations render the river banks unfit to be the sites of great towns. On the **Elbe** are Dresden, Meissen (noted for its porcelain manufactures, and as the place where the manufacture originated in Europe), Magdeburg, and Hamburg.

The **population** of Germany is rapidly increasing, notwithstanding a rapid emigration, especially to the United States of America. Its average density is upwards of 200 to the square mile.[2] The majority speak **German** dialects, but in the east

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[1] See p. 102.

[2] The densest population is in the kingdom of Saxony (where the density exceeds 500 to the square mile) and in the industrial region of the west. Comp. p. 147 n. 1.

(Prussian province of Posen, and parts of the provinces of West Prussia and Silesia) the people are chiefly Poles, a **Slavonic** people. At one time Slavs extended much farther west. The migrations of German tribes which broke up the Roman empire in the fourth and fifth centuries were largely due to the pressure of Slavs in the east, and gradually the Slavs advanced as far as the Elbe and the Saale (the middle of Germany). By degrees they were driven back, and those who were left for the most part Germanized. The German-speaking tribes then became the leading power in Central Europe. A German Empire, consisting of a large number of feudal states, embraced not only the greater part of the present Empire, but, at the height of its power, also Bohemia, Moravia, the entire domain of the Alps, the north of Italy, the Burgundian plain in the basin of the Rhône and Saône, Belgium, and the Netherlands. The supreme ruler claimed to be the successor of the Roman emperors, and, being crowned by the popes, called his dominion the **Holy Roman Empire.** From the sixteenth century, in consequence of the wars between Roman Catholics and Protestants after the Reformation, the power of the emperors rapidly diminished, the different states becoming more and more independent, and during the Napoleonic wars the empire ceased to exist even in name. A confederacy was then formed, of which Austria was a member; but Austria was expelled in 1866 after a war with Prussia, which henceforth became the leading state. The present German empire, comprising twenty-five independent states, besides the Imperial territory of Alsace-Lorraine,[1] was constituted in 1871 during the continuance of the Franco-German war.

The following table shows the principal members of the German Empire:—

Kingdoms	Area in thousands of sq. miles	Pop. in millions
Prussia	134	27
Bavaria	29	5
Saxony	5·8	3
Würtemberg	7·5	2
Imperial Territory		
Alsace-Lorraine	5·6	1·6

Grand-duchies	Area in thousands of sq. miles	Pop. in millions
Baden	5·8	1·5
Hesse-Darmstadt	3	0·6
Mecklenburg-Schwerin	5	0·6
Mecklenburg-Strelitz	1	0·1
Saxe-Weimar	1·4	0·3
Oldenburg	2·5	0·3

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[1] Ger. *Elsass-Lothringen*, but generally known in this country by the French name on account of the long connection of the provinces with France, from which

There are in addition five **duchies**[1] and seven **principalities**, all smaller than an average English county, besides the three **free cities**[2] of Hamburg, Bremen, and Lübeck, which have a republican form of government.

The position of these states can be learned only from the map; but it may be noted that Prussia extends (with interruptions) along the whole length of North Germany; in South Germany between France and Austria, Alsace-Lorraine, Baden, Würtemberg, and Bavaria, succeed one another from west to east, and Saxony lies to the south of Central Prussia. The kingdom of Prussia is divided into twelve provinces, most of which are at least twice as large as Yorkshire.

Three-fifths of the inhabitants of the empire are **Protestants**, scarcely two-fifths (chiefly in the east and south-west) **Roman Catholics**. **Education** is very widely diffused and highly advanced. There are twenty-one **universities**, the chief of which are **Berlin and Leipzig**.

Towns.—1. Seaports. On the coast of the German Ocean, where a line of downs, fringed by small islands (the Frisian Islands) separated from the coast by a sea so shallow[3] that several of them can be reached on foot at low tide, forms a continuation of the coast-line of Holland, the only seaports are at the mouths of the rivers.

On the Weser stands **BREMEN**, at the head of navigation for sea-going ships, but no longer accessible for ships of large burden,[4] on which account **Bremerhaven**, at the mouth of the estuary, was founded by the city on land purchased in 1827 from Hanover, which has itself founded the contiguous seaport of **Geestemünde**; **HAMBURG** (300; pop. of the entire state, 450), at the head of the estuary of the Elbe, is still accessible, with the aid of the flood-tide (which rises on an average above 6 feet), for the largest sea-going vessels, and is the chief seaport in Germany. This pre-eminence it owes not only to its commerce with the eastern ports of Britain and North America, but also to the fact that it stands at the mouth of a river which is navigable even as high as the industrial region of Saxony. The contiguous

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they were acquired by Germany only at the conclusion of the Franco-German war in 1871. It is directly under the Imperial government.

[1] Brunswick, Saxe-Meiningen, Saxe-Coburg Gotha, Saxe-Altenburg, Anhalt.

[2] Often called the Hanse Towns, as being the last independent survivors of the *Hansa*, a league of trading towns formed in the Middle Ages for mutual protection. The league had a depôt in London which was long known as the Steelyard.

[3] The so-called *Watten*.

[4] See Introd. p. 61 (1) (*c*).

port of **Altona** is in the Prussian province of Schleswig-Holstein, and hence a custom-house separates the two towns. **Cuxhaven**, a port belonging to Hamburg, at the mouth of the estuary, is naturally of less importance to Hamburg than Bremerhaven to Bremen, though useful, especially in winter. **Tönning**, at the western end of the **Eider Canal**,[1] which affords a passage for small seagoing ships between the German Ocean and the Baltic, is a small town but a seaport of rising importance, in consequence of its exports to Britain of sheep and cattle. The inlet in the north of the duchy of Oldenburg, known as the Jahde, due to an irruption of the sea in the Middle Ages, was purchased in 1823 by Prussia, which at great cost established here the naval station of **Wilhelmshaven**, the only German naval station the waters of which do not freeze in winter.[2]

The east coast of Schleswig-Holstein presents a complete contrast to that of the west, having a large number of beautiful creeks, forming admirable natural harbours, only one or two of which, however, have anything but local importance.

Kiel (Prussia), having the finest natural harbour on the German shores of the Baltic, is the principal station of the German navy, and a place of considerable trade. **Lübeck**, at the head of the next bay to the south-east, was in the Middle Ages, before the extension of German civilisation to the seaports in the east of the Baltic, and before the discovery of America gave greater importance to the seaports communicating more directly with the Atlantic, one of the leading seaports in Europe, for some time at the head of the Hansa, but is now only of local consequence through its Baltic trade.

Wismar (Mecklenburg-Schwerin) is still more decayed, and **Stettin** (Prus. prov. Pomerania), at the mouth of the Oder, is the next important seaport. **Swinemünde**, on the island of Usedom, has the same relation to Stettin as Cuxhaven to Hamburg, and is, besides, a fortified naval station of the German Empire. On the low, flat coast[3] bordering the sterile strip of Eastern Pomerania, there are no seaports of consequence; but in the provinces of East and West Prussia there are three ports, Danzig, Königsberg, and Memel, all of which carry on a large export trade in the products of the land behind them (timber, grain, flax, and hemp). **DANZIG** (prov. of West Prussia) stands at the mouth of a small branch of the Vistula, which diverges to the Gulf of Danzig, instead of entering the shallow lagoon called the **Frisches Haff**, which is separated from the gulf by a long, low sand-spit. **KÖNIGSBERG** (Eastern Prussia), at the mouth of the Pregel, at the eastern extremity of the Haff just mentioned, owes its rise to an inroad of the sea, which effected a communication with the Baltic at this part. It is the seat of a university at which the philosopher Kant was a professor. **Memel**

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[1] It is now intended to supersede this canal by another deep enough for the largest vessels, to be constructed from the mouth of the Elbe to Kiel Bay (the eastern end of the present canal).

[2] The comparatively fresh waters of the Baltic freeze very readily, see p. 69.

[3] See Introd. p. 48.

stands at the northern extremity of the **Kurisches Haff**, which is even shallower than the Frisches Haff, and hence inaccessible to sea-going vessels.

2. Inland Towns of the Plain.—The most important of these is **BERLIN** (Prussian province of Brandenburg), capital of Prussia and the German Empire, on the insignificant river **Spree**, which communicates with the Elbe, partly by means of artificial channels.

Situated in the midst of an unfruitful, sandy district, it owes its importance solely to the fact of its lying in the centre of the German plain, which made it a convenient spot to select as the capital of the power which acquired predominance in that plain.[1] This fact has likewise promoted the development of its trade, and manufacturing industry (above all, the making of machines) has naturally been added. Its population is now upwards of 1,300,000. About 20 miles to the west is the garrison town of **Potsdam**, with the summer palaces of the Prussian kings.

Posen (prov. Posen), a flourishing commercial town on the Warta (trib. Oder), almost due east of Berlin, likewise owes its rise to its central situation. South of Posen, **BRESLAU**, the chief town of Silesia not only the seat of a great iron industry (see above p. 153), but also of various other manufactures and the chief market for Silesian wool and zinc. **MAGDEBURG** (prov. Saxony), west-south-west of Berlin on the Elbe, where some harder rocks rise above the plain to form the banks of the river, and where accordingly the river was easily bridged;[2] hence an important place both in war and commerce. It also lies at the westernmost point of a long reach of the river which divides a fertile tract on the west from barren sands in the east, and as the former is the chief district in Germany for the growth of sugar-beet, Magdeburg is the centre of the German manufacture of sugar.[3] In 1631 the town was cruelly sacked by the soldiers of Tilly the Imperialist general, and its military importance is still recognised by the fact of its being the only place in the centre of Germany the fortifications of which are maintained. South-south-east of Magdeburg, in the same province, **Halle**, on the Saale, noted from an early date for its salt works, now a rapidly growing town in consequence of the varied manufacturing industries fostered by beds of lignite in the neighbourhood, in particular the centre of paraffin and petroleum refining, the raw material for which is obtained from these deposits; seat of a university. West-north-west of Magdeburg (nearly on the same lat. as Berlin), **HANOVER** (prov. Hanover) on the Leine, where it begins to be navigable, the residence of the former kings of Hanover, and now important as the centre of the Hanoverian railway system.

All the towns of the plain hitherto mentioned are now in the kingdom of Prussia, but there are two large towns in the kingdom of Saxony in this part of Germany, one, **DRESDEN** (250), the capital, celebrated for the beauty of its situation, its art treasures, and its mild climate, all of which make it a favourite place of residence for men of means (including many English). It is also noted as the centre from which one may visit the scenery of the so-called **Saxon Switzerland**, where the Elbe breaks through the mountains at the end of the Erzgebirge amidst fantastically weathered sandstone rocks.[1] The second of the cities referred to is **LEIPZIG**, in a rich plain at the meeting-place of two great high-roads,[2] the one from Frankfurt and the Main valley across the Franconian forest, the other from Bohemia, hence from an early period a great seat of trade, largely conducted at periodical fairs, which are kept up to this day. They are held twice a year. Furs and woollen goods are the staple articles of trade, and at the Easter fair an immense book-market is opened, Leipzig being the centre of the German book-trade. Since the creation of the present German Empire it has been made the seat of the supreme courts of law.

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[1] See Introd. p. 61 (3) (*a*). [2] See Introd. p. 61 (2) (*c*). [3] See p. 109 n. 1.

Brunswick,[3] the capital of the duchy of the same name, is also a flourishing town. The Duchy, like the adjoining Prussian province of Saxony, is a great seat of the cultivation of sugar-beet, and the town of Brunswick, like that of Magdeburg, a centre of the sugar industry, as well as of various manufactures.

3. **German Highlands.**—On the north-west of the German highlands are the industrial towns of the Prussian provinces of the Rhine already mentioned. On the Main **FRANKFURT** (Pruss. prov. of Hesse-Nassau), formerly a free town, but annexed in 1866 to Prussia, still one of the chief seats of banking and exchange in Germany, but chiefly celebrated as the birthplace of Goethe, the greatest of German poets. Near the left bank of the Rhine, **STRASSBURG**, the chief town of the Imperial territory of Alsace-Lorraine, the seat of a university very liberally endowed since the province in which it lies was acquired by Germany. Further south **Mülhausen**,[4] the centre of a busy cotton manufacturing district. In the valley between the Black Forest and the Suabian Alps **STUTTGART**, on the Neckar, capital of the kingdom of Würtemberg, a rapidly growing town, another important seat of the German book-trade. In the middle of the southern plateau **MUNICH**[5] (260), capital of the kingdom of Bavaria, on the Isar, the largest town in South Germany, with a famous university and polytechnicum, and rich art treasures. West-north-west **Augsburg**, on the Lech, formerly a place of great commercial importance on account of its situation at the meeting of the roads leading across the Alps by the Splügen and Brenner Passes, and at the head of the marshes which border the lower Lech.[6] **Ulm**, in Würtemberg, at the point where the road across the Suabian Alps from the Neckar valley joins the Danube, and where this river begins to be navigable for vessels of 100 tons, has had a similar history. **Ratisbon** (Ger. Regensburg), in Bavaria, near the northernmost point of the Danube, where it begins to be navigable for steamers, is likewise a town of great historical importance. In northern Bavaria (Franconia), **NÜRNBERG**, an old and antique-looking

[1] See cut, p. 161.

[2] See Introd. p. 61 (3).

[3] Ger. *Braunschweig.*

[4] Fr. *Mulhouse.*

[5] Ger. *München.*

[6] Were it not for these marshes the town would naturally have grown up at the confluence of the Lech and Danube. See Introd. p. 61 (2) (*a*) and (3).

town celebrated for its manufacture of and trade in wooden toys, the material for which is obtained from the Black Forest. The small mining town of **Eisleben** at the eastern end of the Hartz Mountains (Prus. prov. Saxony) is memorable as the birthplace of Luther. Along the northern skirts of the Thuringian Forest, among the small states known as the Thuringian States, **Eisenach, Gotha, Erfurt,** and **Weimar** (the last the home of Goethe for the greater part of his life) succeed one another from west to east at the distance of from fifteen to twenty miles.

THE ALPS.

Approximate latitude: Mont Blanc, 46° N.; longitude, 7° E.

The Alps are, beyond comparison, the most important mountain system in Europe. They do not cover the largest area, for both the highlands of Scandinavia and the Ural Mountains have a greater extent, but they contain the highest peaks, have the greatest average elevation, and, what is most important, instead of being situated in a thinly populated region, lie between countries in which the population is dense, and has long been highly civilised.

The mountains belonging to this system sweep round the west and north of Italy, and spread out to the east in a number of nearly parallel chains in Austria. In consequence of this curved form, and the great breadth which in some places the system attains, the inner margin is much shorter than the outer, in round numbers 460 as against 800 miles. The slope on the inner side (towards Italy) is much more rapid than on the outer, and hence the appearance of the Alps as seen from Milan is much more imposing than when seen from Bern.

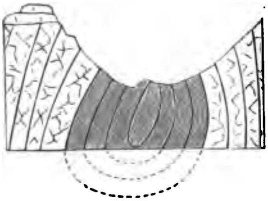

Fig. 24.

The structure of these mountains as illustrated in the accompanying figure (fig. 24) showing how in the valley of Chamounix below Mont Blanc the strata have been folded between masses of gneiss and granite, proves that the forces to which they owe their elevation have been extraordinarily violent in their action. The greater steepness of the slope on the inner side indicates that on this side there has been most resistance to the crushing force that led to their folding and elevation.[1]

In the broader (east to west) part of the system, the mountains can be divided according to the nature of the rocks of

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[1] See Introd. p. 34.

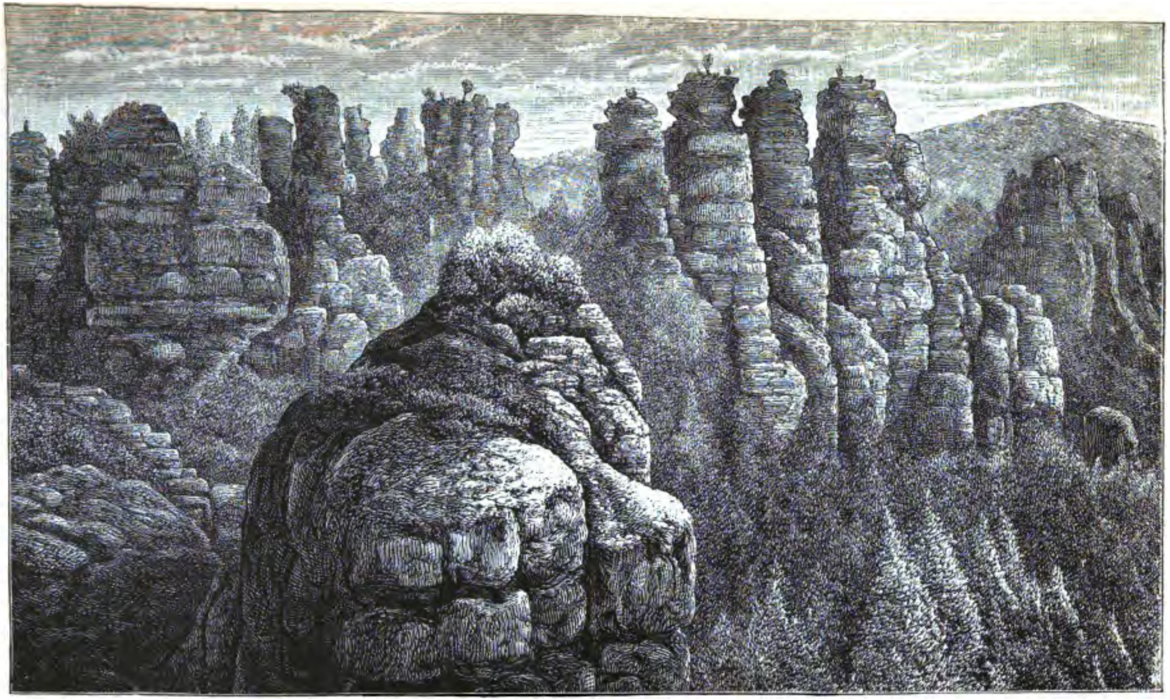

FIG. 25. SCENE IN THE 'SAXON SWITZERLAND.' See p. 159.

which they are composed into **three zones**, succeeding each other from north to south. The middle zone consists of granite and other crystalline rocks,[1] which form the core of the system; while in the outer zones various limestones predominate, so that these parts of the system have been called the **Limestone Alps.** On the north the limestone zone extends farther west than on the south or inner side, where in the west the limestone zone is wanting, crystalline mountains descending right down to the plains of Italy. On this side the limestone zone begins only on the east of the Lago Maggiore in the form of a very narrow fringe, which spreads out to the east.

The narrowest part of the system is that which runs from north to south, between Italy and France, and in this part the principal valleys are those which, traversed by the **Durance** and **Isère**, wind in numerous zig-zags to the valley of the Rhone. The system suddenly increases greatly in breadth where it turns eastwards, and here we begin to meet with its most striking features—its loftiest peaks, its snow-fields, glaciers,[2] and waterfalls, its parallel chains with intervening longitudinal valleys[3] traversed by important rivers, (the Rhone, Rhine, Inn, Enns, Drave, &c.), and sometimes occupied by large and beautiful lakes.[4] All of these longitudinal valleys open on the outer side of the curve described by the whole system, but some of the transverse valleys on the inner side are occupied by lakes of even greater beauty.[5] The most important of the longitudinal valleys is that of the Upper Rhone, between the Bernese Alps on the north and the Alps of Valais on the south, and into it descends from the former chain the largest of the Swiss glaciers, the **Aletsch.** The chains that bound this valley contain the highest peaks of the whole system, several on both sides rising to above **14,000** feet in height, and two (both in the south) to above **15,000 feet.** One of these, **Mont Blanc**, in the French department of Upper Savoy, at the angle where the general direction of the mountain system becomes east and west instead of north and south, attains

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[1] Crystalline rocks are composed of small particles or fragments of particles of a definite and regular form. Most igneous rocks (see p. 93 *n.*) are crystalline, and crystalline rocks are generally hard.

[2] See Introd. p. 53.

[3] *Longitudinal* valleys are valleys separating parallel mountain chains, those which run at right angles to the general direction of a chain being called *transverse* valleys.

[4] See Switzerland, p. 168.

[5] See Italy, p. 200.

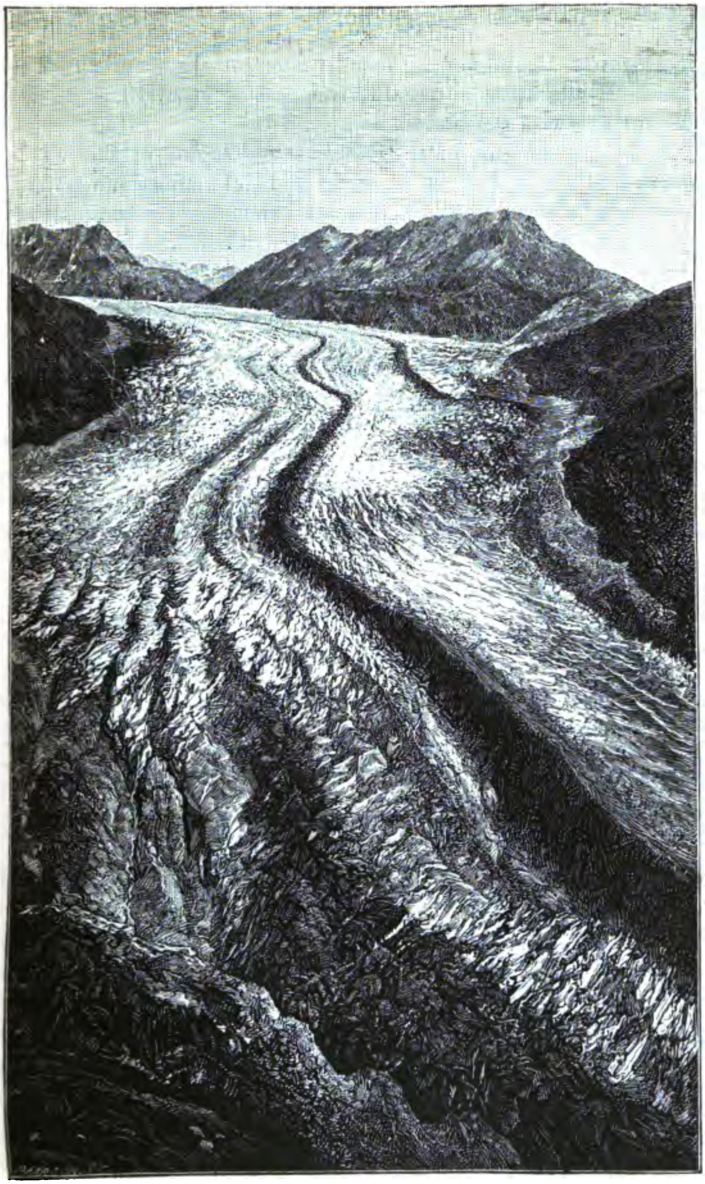

FIG. 26.—THE ALETSCH GLACIER.

the height of 15,700 feet, or not far short of three miles. The other is **Monte Rosa** situated to the east of Mont Blanc on the Italian and Swiss frontier.[1]

It is one of the most noteworthy features of the whole system that the peaks rise to a great height above the general elevation of the mountain chains, and that there are numerous deep notches or passes led up to by gradual ascents on both sides, enabling commercial intercourse to be carried on across the mountains. Hence, from an early period, these mountains have not acted as a barrier to communication so much as might be expected from their extent and elevation. Even in ancient Roman times one of the great routes of trade was that by which amber was conveyed from the east shores of the Baltic across the Eastern Alps, where the passes are lowest. In this part of the system there are scarcely any important passes above 5,500 feet in height, while in the Middle Alps, from the sources of the Adige to Mont Blanc, there are few under 6,500 feet, and the principal passes in the Western Alps are also above that height. In many places the passes have to be protected by galleries (archways with openings for light on one side) against **avalanches.**[2]

The **chief passes** are: (1) in the **Western Alps**, the part of the system running mainly north and south—(*a*) the **Col di Tenda**, across the Maritime Alps, between the south-east of France and the south-west of Sardinia. (*b*) The **Mont Cenis Pass**, between the Isère valley (with the fortress of Grenoble) and the valley of the Dora Riparia (a tributary of the Po leading direct to Turin), in the Middle Ages the most frequented of all the passes of the Western Alps. (2) In the **Middle Alps**, between Mont Blanc and the valley of the Adige (Ger. Etsch)—(*a*) the **Great St. Bernard Pass**, between the valley of the Rhone and the north-west of Italy (Aosta on the Dora Baltea, a tributary of the Po), only a bridle-path. (*b*) The **Simplon Pass**, a much more important pass, now crossed by a fine carriage-way, between the Rhone valley and the valley opening on the west side of the Lago Maggiore. (*c*) The **St. Gothard Pass**, another carriage road, between the valleys of the Reuss (head of Bay of Uri) and Ticino. (*d*) The **Splügen Pass**, between the valley of the Hinter-Rhine (in which the road passes through the fearful gorge of the Via Mala) and the valley leading down to the Lake of Como. (*e*) The **Maloja Pass**, between the head of the valley of the Inn (East Switzerland) and another valley leading down to the same lake. (*f*) The **Furca Pass**, between the head of the Rhone valley and that of the valley of the Reuss—the most important of all the passes connecting longitudinal valleys. (3) **In the Eastern division**: (*a*) the **Brenner Pass**, connecting the two great valleys of Tyrol, that of the Adige in the south (with the town of Trent) and that of the Inn in the north, where the road leading from the pass crosses the Inn at Innsbruck.[1] (*b*) The **Semmering Pass**, between Lower Austria and Styria, on the route from Vienna to Trieste. The Mont Cenis, St. Gothard, Brenner, and Semmering Passes are now largely superseded by railways piercing the Alps by tunnels. The Mont Cenis tunnel, however, lies fifteen miles to the south-west of the pass from which it takes its name. The St. Gothard tunnel is the longest in the world—nearly ten miles in length.

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[1] See section across Europe, p. 63.

[2] An avalanche is a fall of a mass of snow, and often works great destruction. The mere agitation of the air caused by an avalanche has been known to uproot trees.

Though lying between two populous regions, the Alps themselves are necessarily thinly populated. The **principal occupation of the people is rearing of cattle**, for which the rich pastures, nourished by the plentiful rains characteristic of mountainous regions,[2] and the moisture derived from the melting snows, afford abundant food. The limit in height of permanent habitation is about 6,000 feet, this being also the limit of forests, which serve as a protection not only against avalanches but also against the washing away of the soil by torrents and torrential rains. The zone between 2,000 and 6,000 feet in height is known as the **Fore-alps**. From 6,000 feet to the snow-line,[3] about 9,000 feet (rather higher on the southern slopes), is the zone of the **alps** in a special sense—that is, mountain pastures grazed by cattle in summer, pastures on which the only woody growths are crooked and stunted pines and a few shrubs, above all the beautiful Alpine roses (rhododendrons). This is the zone of the châlets or summer-huts of the Alpine herdsmen. The highest zone of all is that of **perpetual snow**, and the scene from one of the higher peaks overlooking this zone is very different from what might be expected from the aspect presented to spectators at the base. Instead of a continuous line of peaks one sees a broad plateau rising everywhere into billowy crests, all snow-wrapt, or only here and there exhibiting a surface of naked rock.

SWITZERLAND.

Approximate latitude: middle point, 47° N.; longitude, 8½° E.

Switzerland occupies the heart of Europe. Its area is less than one-fifth of that of Great Britain, and its population is less than three millions. Altogether about five-sevenths of the surface is divided between the Alps, in the south and east, and the Jura in the north-west, while the remainder forms a plain or rather a hill-studded plateau stretching north-east from the **Lake of Geneva** to **Lake Constance** (German, Bodensee). The length of the plateau, which contains most of the agricultural land and the majority of the population of Switzerland, is about 100 miles, and its average breadth from twelve to twenty miles.

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[1] Ger. = Inn-bridge. [2] See Introd. p. 52 (3) (*a*). [3] See Introd. p. 53.

Of the surface occupied by mountains the part belonging to the Alps is four times as great as that belonging to the **Jura.** The latter consists of a series of nearly parallel mountain chains, which begin in the south-west (in France, where they have their highest peaks), and extend north-eastwards along the north-west borders of Switzerland into Germany, the average height of their crest gradually diminishing from about 4,000 to 2,000 feet. They are mostly composed of a light-coloured limestone,[1] in which there are numerous caverns, and in which the streams often disappear into underground channels.[2] Unlike the Alps, they have few peaks rising very far above the general height of the crest, and few transverse valleys.[3] The longitudinal valleys are bleak, high-lying depressions. The Jura Mountains agree with the Alps in having the more gradual slope to the north-west (the outside of the curve), so that the more abrupt descent in this case is towards the Swiss plateau.

Since the Alps form the great water-parting of Western Europe,[4] the **rivers** of Switzerland flow outwards in all directions—the **Rhine** to the German Ocean, the **Rhone** to the Gulf of Lyons (west of Italy), **tributaries of the Po** and **Adige** to the Adriatic, the **Inn** to the Danube, and hence to the Black Sea. Almost all the Swiss rivers are too impetuous for navigation except by small craft, but they are much used for floating timber from the mountains. The **Aar**, the Rhine tributary which traverses the plateau, becomes navigable on leaving Lake Thun. About midway

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[1] The limestone of the Alps is generally of a dark colour.

[2] 'No whisper, nor murmur, nor patter, nor song of streamlet disturbs the enchanted silence of open Jura. The rain-cloud clasps her cliffs, and floats along her fields; it passes, and in an hour the rocks are dry and only beads of dew left in the Alchemilla leaves,—but of rivulet or brook,—no vestige, yesterday, or to-day, or to-morrow. Through unseen fissures and filmy crannies the waters of cliff and plain have alike vanished, only far down in the depths of the main valley glides the strong river unconscious of change.'—RUSKIN. See Introd. p. 29 and comp. p. 110.

[3] See p. 162 *n.* 3.

[4] See p. 66.

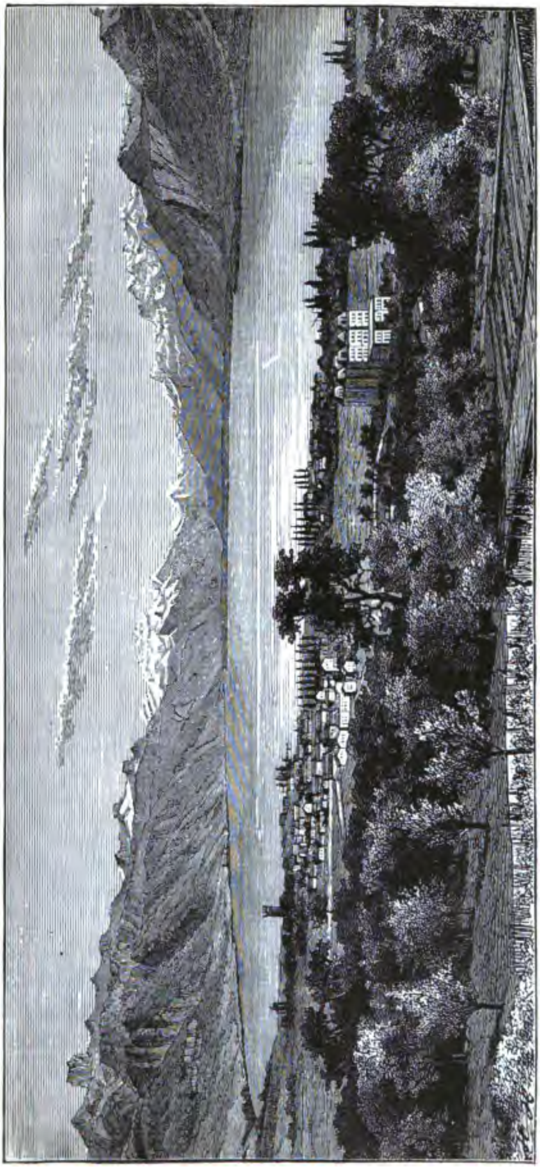

Fig. 27.—The Lake of Geneva.

between that lake and the Rhine it is led by an artificial channel into the **Lake of Bienne,** so as to protect the lower part of its course from inundations.[1] The numerous **lakes,** partly on the north of the Alps (**Geneva, Brienz,** and **Thun**; **Lucerne, Zürich, Wallenstadt, Constance,** &c.), partly on the plateau (**Neuchâtel and Bienne**), are important as means of inland communication, while those of the Alps are all celebrated for the beauty of the surrounding scenery.

Besides the crops grown in England, Switzerland produces in the warmer parts **maize, wine,** and **tobacco.** The **vine** flourishes even to the height of 2,000 feet, and is grown principally in the south-west and the north-east (round the Lakes of Geneva and Zürich). The products of the pastures are more important than those of the fields and vineyards, and **cheese** forms a large export,[2] an export that is increasing at the expense of field produce, since the railways of modern times are giving increased value to the products of the Swiss mountain pastures, and making it increasingly easy for Switzerland to obtain supplies of grain from abroad. But with an average population of 180 to the square mile, and nearly a third of the area unproductive, the soil of Switzerland alone is unable to sustain the inhabitants, and great quantities of **grain and other agricultural produce** have to be **imported.** This import is balanced chiefly by an **export of manufactured goods,** Switzerland, notwithstanding its scarcity of minerals, and in particular of coal and iron, having a high place among the manufacturing countries of Europe.

For such industries, it has two advantages to place against its disadvantages: (1) the water-power of the Alps, which is more largely utilised in Switzerland than elsewhere; (2) its central position between populous and highly civilised countries. The chief manufacturing industries are **cotton** (in the north-east), and **silk** (in Zürich and Basel). **Watchmaking** is an important handicraft in the Jura, and Geneva is the centre of the Swiss trade in watches.

The divisions of Switzerland, 22 in number, are known as **cantons,** the largest of which, the **Grisons,** is about the same size as the English county of Lincoln. Though none of them has a population of 100,000, they are all, to a certain extent, independent states, managing their own local affairs, mostly as little republics,[1] but all uniting to form a **Confederacy** for the regulation of affairs common to the whole. The Confederacy, as it now exists, originated in the present century, and the different cantons composing it had a different history, as they still differ in **language**, **religion**, and culture. **German** is spoken by more than two-thirds of the people, **French** by almost one-fifth (chiefly in the south-west), **Italian** in Ticino and some other southern valleys, and in the south-east a few thousands speak **Rumonsh**, a language peculiar to the locality, an independent descendant of the Latin. About three-fifths of the entire population are **Protestants**, the remainder **Roman Catholics**, the latter inhabiting chiefly the more mountainous cantons.

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[1] See Introd. p. 31.

[2] Gruyère cheese is made in the canton of Freiburg, in western Switzerland.

The Protestant cantons are by far the most advanced in culture, and the encouragement given chiefly through their influence to education (which is obligatory to a certain extent in all cantons) is one of the chief causes that have enabled this little country to triumph over the obstacles to the development of manufacturing industry within her borders. There are four universities; and at Zürich there is one of the best-equipped technical schools in Europe—a school in which students are taught everything connected with manufactures, as well as agriculture, forestry, building, and engineering.

Chief Towns.—There are only three with more than 50,000 (including suburbs). **Zürich**, the intellectual and commercial centre of German Switzerland, is situated at the lower end of the lake of the same name, its suburbs extending for several miles along both shores of the lake. Its commercial importance is largely due to the fact that it is the first considerable town in Switzerland both on the road and railway through the heart of the country by way of the St. Gothard to the south, and on the road across the Splügen Pass farther east. **Basel**,[2] at the bend of the Rhine[3] and the head of the fertile valley lying between the Vosges and the Black Forest, has been a place of consequence since the time of the Romans, and is noted for its manufacture of silk ribbons. **Geneva**, at the south-west end of the lake of the same name, at the point where the Alps and Jura almost meet, is the intellectual centre of French Switzerland, and a favourite place of residence for strangers. In the early part of the sixteenth century it was the residence of Calvin, the founder of one of the chief Protestant sects of the Continent, and was then practically under his sway. **Bern**, on the Aar, has been chosen as the seat of the legislature of the Confederacy, chiefly on account of its central position. The seat of the supreme courts of law is **Lausanne**, on the north shore of the Lake of Geneva. **Lucerne**, at the lower end of the lake of the same name, and **Interlaken**,[1] on the plain between the Lakes of Thun and Brienz, though both small places, are well known throughout the western world as the head-quarters of the numerous visitors who make the mountains of Switzerland their holiday-ground. Of these there are known to have been nearly a million and a half in a single year. Within sight of Lucerne, on the shores of the lake, is the **Rigi**, a mountain ascended by crowds of tourists for the sake of the magnificent views which its summit commands. Its top can now be reached by railway.

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[1] Only one, Neuchâtel (Ger. = Neuenburg, both names meaning New Castle), has a monarchical form of government, being subject to the King of Prussia.

[2] A German-speaking town, but more familiarly known in this country by its French name of Bâle, from the fact that the English usually reach it through France.

[3] See Introd. p. 61 (2) (*b*).

AUSTRIA-HUNGARY.

Approximate latitudes: (south-west extremity of England), Prague, Cracow, 50°; (Munich), Vienna, 48°; (Lyon, Milan), Trieste, 46°.
Approximate longitude: 10° to 26° E.

Austria-Hungary is the second in size and the third in population among the great states of Europe. Of all these it is that which has the smallest length of coast-line. The **coasts** are almost everywhere steep and rocky. Opposite Dalmatia, the long strip on the east of the Adriatic, is a row of rocky islands, the northernmost of which form the eastern boundary of the stormy Gulf of Quarnero (with the seaport of Fiume). On the other side of the peninsula of Istria is the more sheltered Gulf of Trieste, with the much more important port of Trieste at its head.

In most parts Austria-Hungary is without natural boundaries. The **surface** is composed of extensive mountainous areas, extensive plateaux, and extensive plains, the last lying in the interior. In the west, the chief mountain area is that of the **Alps**, which in the south are connected by a series of arid limestone plateaux with the Dinaric Alps and the mountains of the Balkan Peninsula. With the exception of the **Hohe Tauern**, the central range of the Alps beginning immediately to the east of the Brenner Pass, a range in which the chief peaks rise to upwards of 12,000 feet, all the Austrian Alps can easily be crossed at almost any part. All the important streams from these western and southwestern mountains flow down to the right bank of the Danube.

On the opposite bank of the Danube lies in the first place a **series of mountain-girt plateaux** embracing Bohemia, Moravia, Austrian Silesia, and parts of Upper and Lower Austria. On the east of this highland area a relative depression of about 1,000 feet in height, known as the **Moravian Gate**, separates the Sudetes[2] from the Carpathians and forms an important line of communication between north and south in this part of Europe. It leads along the valley of the **Morava** directly down to the point where the Danube valley, the great line of communication between the east and west, begins to open out into the plain of Upper Hungary. The slope of this series of plateaux is different in different parts. The west (Bohemia) is drained northwards by the **Moldau** and **Elbe**, the east chiefly southwards by the **March** or **Morava.**

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[1] 'Between the lakes.'

[2] See pp. 136, 152.

East of the Moravian Gate the **Carpathian Mountains** sweep round in a semicircle of about 1,000 miles in length from the north to the east of Hungary, and both in the north and east have on the interior parallel ranges or tortuous spurs extending for a great distance into the plain. In the north the inner range, called the **Tatra,** is the loftiest and most rugged part of the whole system, the mountain sides being mostly too precipitous for the accumulation of perpetual snow or glaciers. The eastern assemblage of mountains forms the province of **Transylvania.** The narrower and lower connecting portion in the middle (in the north-east of Hungary) is known as the **Forest Carpathians.**

The great **plains** of the empire lie chiefly to the east of the Danube (in the area watered by the **Theiss** and its tributaries) and along the banks of the **Drave** (Drau [1]) and **Save**, the chief tributaries of the Danube on the right bank. The former area, one almost unbroken plain more than half the size of England and Wales, is the region of the Hungarian **pusstas**, a region which is in winter a succession of morasses or storm-swept snow-wastes, in spring a carpet of green, in summer a scorched and withered desert. Permanent morasses of great breadth border the Theiss and its tributaries.[2] The principal occupation of the people in this region is cattle-rearing, and the rods and poles of the wells for the cattle are in many places the most conspicuous features in the landscape by day, as the fires of the shepherds are by night.[3] But there are also large areas fit for agriculture, and above all in the district known as the **Banat**, the square enclosed by the Maros, Theiss, Danube, and the mountains of Transylvania, a region covered with a rich soil which brings forth the most abundant crops of **wheat** and **maize**, together with those of a more southerly climate (**cotton, rice**).

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[1] The German name.

[2] See p. 28.

[3] See cut, p. 173; also p. 52.

The wide low-lying valleys of the Drave and Save bring forth luxuriant crops of wheat and maize as well as good wine.

Outside the Carpathians is the plateau of Galicia and Bukovina,[1] drained partly by the Vistula and its tributaries, partly by affluents of the Dniester (average height 1,000 feet).

From the structure just described it will be seen that by far the greater portion of the Austro-Hungarian Empire is drained by the **Danube**, which being navigable for steamers throughout its course within the Austrian dominions is an important channel of trade. The chief tributaries are likewise navigable for steamers for a large part of their course.

The principal **lakes** of the Austrian Empire are Lake **Balaton** (German Platten-see[2]) and the **Neusiedler-see**, in the west of Hungary, the former among the hills to the west of the Danube, where it flows from north to south, the latter in the plain of Upper Hungary south of the Danube.

Austria-Hungary is **mainly an agricultural state.** About three-fourths of the people are dependent on agriculture, and, though the methods of cultivation are not very advanced, **grain** (more especially **wheat**) is an important article of export in all ordinary years. **Fruit** and **wine** are likewise abundantly produced. **Manufacturing industries** are relatively insignificant except in Vienna and the north-west strip (from Bohemia to beyond Cracow), where the presence of coal and iron furnishes the means of carrying on manufactures on a large scale. Among the **mineral products** are the precious metals (in the production of which Austria-Hungary is surpassed only by Russia among European states), and salt. In the north of Hungary **opals** are obtained.

The **commerce** of Austria by sea is almost confined to the Mediterranean.

None of the great states of Europe is more diverse in **race** and **language** than Austria-Hungary. The people in the west are chiefly of **German** origin and speak the German language; but elsewhere the majority of the people are **Slavs.** The ruling race in Hungary is that of the **Magyars**[3] (whose language still survives), and in the east of the empire the Jews form an influential and rapidly increasing element of the population, having

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[1] 'Land of Beeches,' so called from the immense extent of its beech forests.

[2] *See* is German for lake.

[3] See p. 71.

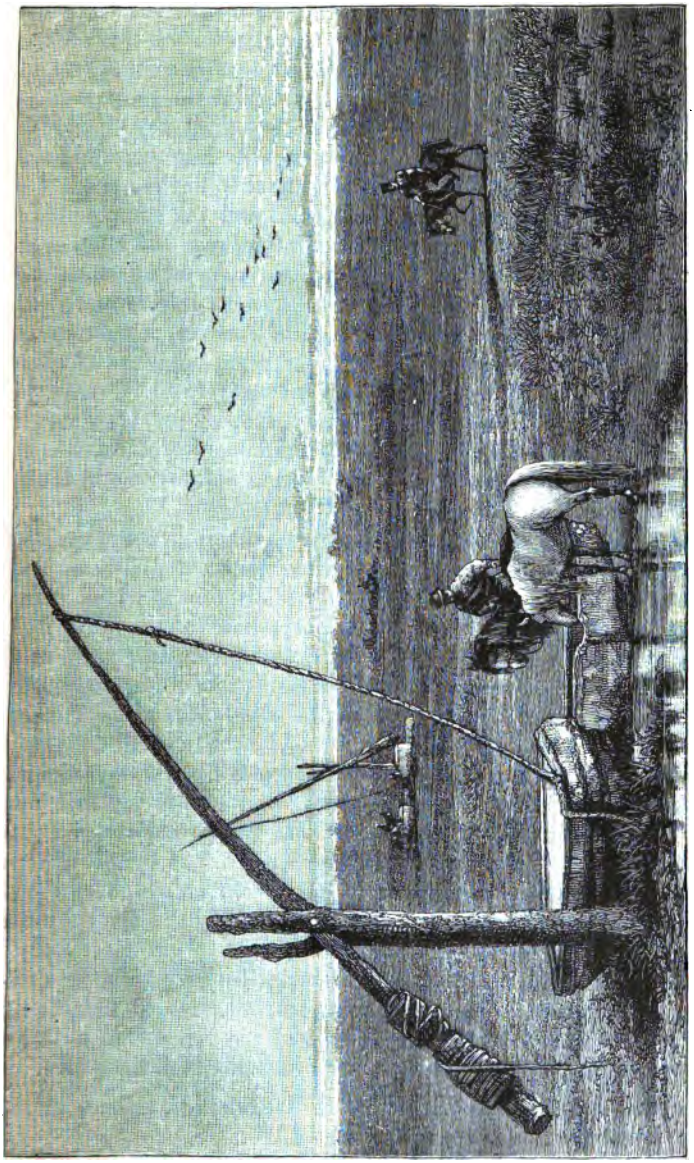

FIG. 28.—SCENE IN THE HUNGARIAN PUSSTAS. (By the kind permission of Mr. Edward Stanford).

the command of the entire trade. Intellectually the Germans are the most advanced section of the population. As this section decreases in number towards the east, so also does the general level of intellectual culture decline, and with it the state of agriculture and manufacturing industry. The **most thickly populated parts** of the empire are the plains on the Danube, along the spurs of the Alps, and the manufacturing strip in the north.

The diversity of the political divisions and the complexity of the government correspond to this variety of race and language; and these differences are indications of the manner in which the monarchy grew. The great **political divisions** having historical names and designations (Archduchies of Austria, Kingdoms of Hungary, Bohemia, &c.) are mainly the representatives of once independent states, which have been successively added entire to the possessions of one reigning family, that of the Hapsburgs, who acquired the sovereignty of the archduchies of Austria in 1282, and that of the kingdoms of Bohemia, Moravia, and Hungary in 1526.

The **Government** is a limited monarchy, and there are various Parliaments. First, the crown-lands or political divisions just referred to are divided into two great groups, one of which comprises the territory enclosed by the Carpathians on the north and east, bounded mainly by the Save and Danube on the south and by the Alpine provinces in the west, while the other comprises all the rest. The latter are called the **Cis-Leithan**, the former the **Trans-Leithan** crown-lands, from the Leitha, a small tributary of the Danube on the right bank on the frontier of Lower Austria. Each of these groups has a Diet or Parliament to legislate on matters common to the members of the group, and each of the crown-lands has a separate Diet for local affairs, while affairs common to the whole empire are debated in an assembly composed of delegates elected in equal numbers by the Cis-Leithan and Trans-Leithan Diets.[1]

In **religion** the inhabitants of Austria-Hungary are more uniform than in race, language, and government. Nearly four-fifths of the people are Roman Catholics; of the remainder, a large proportion Protestants, another large section Greek Catholics.

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[1] The province of Bosnia and Herzegovina is not included in either of the groups mentioned. See Balkan Peninsula, p. 214.

Towns[1] and Districts.—1. Upper and Lower Austria and the North-western Plateaux.

Vienna (720; with suburbs 1104) in Lower Austria, originally a frontier stronghold to defend the eastern entrance to the narrow valley of the middle Danube, founded in the fourth century to replace the more ancient (Roman) stronghold of *Carnuntum*, farther east; restored in the twelfth century, since which period it has constantly grown in importance, not only in consequence of its being the political centre of the growing Austrian dominions, but also on account of its admirable situation for commerce. The advantages of its situation in this respect are due (1) to the fact that here the navigation of the Danube, which, above Vienna, passes through a long series of rapids and narrows, begins to be more convenient; (2) that it lies at the point where trade routes are left open between the three great highland areas of the monarchy, a westerly route along the valley of the Danube between the Alps and the north-western plateaux (a route communicating with South Germany and the Rhine), and a northerly route, communicating with East Germany, through the Moravian Gate, between these plateaux and the Carpathians; (3) that it lies on the point of the Danube nearest the head of the Adriatic, between which and Vienna the Alps are easily traversed, so that it serves as a centre in the trade between the plains of Eastern Europe and the Mediterranean.[2] At the present day Vienna is not only the capital of Austria, but the seat of one-seventh of the manufacturing industries of the empire, of a great university with a world-renowned medical school, a great art centre and money market. In Upper Austria[3] the chief town is **Linz.**

Bohemia, the lozenge-shaped province in the north-west, the drainage of which is to the North Sea, has an area about two-thirds of that of Ireland, with a population considerably larger (about 300 to the square mile). Active manufacturing industry and advanced agriculture combine to give it this dense population. The sheep reared on the upland pastures, and the flax grown in similar situations, have long fostered the **spinning and weaving of wool and linen,** to which in more recent years, since the development of machine factories and the opening of coal-mines, **cotton manufactures** have been added. The extensive forests (covering in all nearly a third of the surface) have furnished material for another important industry, the **making**

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[1] There are only twelve towns in Austria-Hungary with more than 50,000 inhabitants.

[2] Now greatly promoted by the railway across the Semmering Pass (see p. 165).

[3] In this province lies the district known as the *Salzkammergut*, 'the estate of salt chambers,' the district from which Austria-Hungary derives a great part of its salt.

of glass,[1] for which Bohemia has long been celebrated. Though the chief mineral wealth of the Erzegebirge is on the German side, there are on the Bohemian side some mines of tin and silver in this range, the latter in Joachimsthal,[2] whence the silver thaler[3] obtained its name, and here also are the famous **mineral springs** of Marienbad, Franzensbad, and Karlsbad.[4]

The chief town is **PRAGUE**, a strongly built town in the centre of the province, where the Moldau begins to be navigable for larger vessels, and its valley is crossed by the road from northern Bavaria to Moravia. It is the seat of the oldest university in Central Europe (founded in 1348). No other town contains more than 50,000 inhabitants.

The population in **Moravia** and **Silesia**[5] is of about the same density as that in Bohemia, and the products are similar.

Brünn, at the confluence of the Schwarzawa[6] and Zwittawa, near a coal-field, is an important industrial centre; chief manufacture, woollens.

2. The Alpine Provinces.—Among these the population is comparatively thin, and there are few considerable towns.

The chief products of the Alpine provinces are those of the hill pastures. In the more open valleys and on the hill slopes to the east (southern Styria) there are extensive tracts of fertile land, bearing wheat, maize, fruit, and wine. In the valley of the Etsch (Adige), the largest transverse[7] valley in the Alps, there is more of an Italian than a Central European aspect. The products include silk, besides wine and fruit, and the Italian language is spreading farther north every day. In North Styria there are large quantities of iron. The **Erzberg** is almost one mass of hæmatite,[8] and in summer ore can be quarried, being worked in shafts only in winter.

Graz, on the Mur (trib. Drave), in Styria, now an important railway centre, is the only town with a population approaching 100,000, and is the largest in the Alps. **Salzburg**, picturesquely built between two hills, has long been of some importance as the starting-point of a route across the Alps leading into that which crosses the Brenner Pass. **Innsbruck** and **Trent** are the two towns of importance north and south of the Brenner Pass in Tyrol.

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[1] Wood ashes yield potash, which is largely used in this manufacture.

[2] *Thal* (pronounced *tal*) German = dale or valley.

[3] The thaler was a coin in general circulation in Germany till within the last few years.

[4] *Bad*, German = bath.

[5] Austrian Silesia is only a small remnant of the large province of that name, which once belonged to Austria, but the greater part of which was wrested out of Austrian hands by Prussia in the last century.

[6] *-awa*, a Slavonic termination signifying stream.

[7] See p. 162 *n*. 3.

[8] See p. 88 *n*. 4.

3. The Provinces bordering on the Adriatic.—Here, in Carniola, Istria, Western Croatia, and Dalmatia, limestone is the predominant rock, and as the hill slopes have been almost wholly divested of forests,[1] the surface is liable to be stripped of its soil by occasional floods and torrents of rain, and is left exposed to the piercing north and north-east winds (the **bora**). These blast the vegetation, which a blazing sun is at other times apt to scorch. Everywhere in this region rivers disappear in fissures; and caves, underground lakes, and temporary surface lakes[2] are numerous. Only here and there are fertile tracts in bowl-shaped depressions, (probably due to the fall of cavern roofs[3]), where the soil cannot be washed away. Elsewhere crops are rare, and the thin pastures are grazed mainly by goats and sheep. The population is accordingly scanty, and is mostly confined to the coast, where the barrenness of the land drives the inhabitants to the sea for their maintenance. Hence the islands and the borders of the inlets of the Dalmatian coast are peopled by fishermen, from among whom the Austrian Navy obtains its best seamen.[4]

Of the two chief seaports on this coast, **Fiume**, at the head of the Gulf of Quarnero, belongs to the Trans-Leithan provinces, the government of which is endeavouring to promote its growth at the expense of **Trieste**, the Cis-Leithan port, which is still by far the most important seaport of Austria. The latter town has a fine roadstead and relatively easy communication with the interior, but though it has doubled its population in the last forty years, it has latterly been somewhat checked in its growth by the revival of Venice and the growth of Fiume. It is the head-quarters of the Austrian Lloyd's, a ship-building company that carries on a large trade with the Levant. The town itself occupies but a narrow strip between the sea and the edge of the Istrian plateau, the top of which is now occupied by numerous suburbs. The population is almost entirely Italian in speech.

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[1] Felled in former times to supply timber for the fleets of Rome and afterwards of Venice. The most desolate part of the region described in this paragraph is known as the *Karst.*

[2] Such lakes have communications with underground cavities and form on the surface only when the latter are full to overflowing. *Zirknitz* is the largest lake which is thus from time to time formed and drained away.

[3] See Introd. p. 29.

[4] Compare Brittany (p. 141) and Norway (p. 190). Like the Norwegians of the tenth and eleventh centuries, the Dalmatians (or Illyrians, as they were anciently called) were notorious for their piracy at different periods in history, the numerous creeks on the coasts of both countries affording retreats which facilitated piratical operations.

4. Galicia and Bukovina (the former acquired about 100 years ago at the division of Poland,[1] the latter from Turkey) are similar in physical features but differ in population and religion. Galicia is inhabited chiefly by Roman Catholic Poles, Bukovina by Ruthenians (another Slavonic people), adherents of the Greek Church. Both provinces are rich in agricultural produce, and in timber, salt, and petroleum.

Cracow, on the Vistula, in the west of Galicia, formerly a residence of kings of Poland, still has a Polish university, and so too has **LEMBERG**, in the east. At **Czernowitz**, the capital of Bukovina, there is a German university recently founded. Near Cracow are the celebrated salt-mines of **Wieliczka**.

5. Hungary and Transylvania, Croatia and Slavonia.[2]—Most of the towns in the Hungarian plains are more like large villages than towns. They are each spread over a wide area, with large spaces between the houses, and have few public buildings or paved streets, for which, as well as for roads, the country is scantily supplied with materials.

The capital of Hungary is the double town of **BUDA-PEST** (360), on the Danube, the Magyar town of Pest on the left bank (subject to inundations), and the German town of Buda or Ofen on the right bank. The town lies at the foot of the last hills bordering the banks of the Danube, where for the last time the river can be conveniently bridged before it spreads out over the marshy plain[3]; and this position early made it the centre of commerce for Hungary. Its growth has been greatly accelerated since the revival of Hungarian nationality in recent times; the population of Pest almost trebled itself in the thirty years 1850–1880. Next in population to Buda is **Szegedin**, the only important town on the Theiss (at the confluence of the Maros), now an important railway centre. In 1879 it was to a large extent destroyed by an inundation, which was partly ascribable to the works that had been executed to prevent such disasters in the upper part of the course of the river. **Debreczin**, farther north, is the centre of the pusstas on the Upper Theiss. **Temesvar**, the chief town of the Banat, south-east of Szegedin, is another important railway centre, and stands at the head of a shipping canal communicating with the Danube. In **Transylvania** the chief town is **Klausenburg**, in the principal valley leading down to the plains of Hungary. In **Croatia**, **Agram**, on the Save, is the principal town, and it is the seat of a Slavonic university.

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[1] See p. 184 *n*. 1.

[2] These provinces, together with Fiume and its territory, make up the Trans-Leithan crown-lands. Hungary and Transylvania together constitute one crown-land, Croatia and Slavonia another.

[3] See Introd. p. 61 (2) (*c*).

THE EASTERN EUROPEAN PLAIN: RUSSIA AND ROUMANIA.

Approximate latitudes: (south of Shetland Islands, Christiania), St. Petersburg, 60°; (Edinburgh, Copenhagen), Moscow, 56°; Odessa, Astrakhan, 47°; (mouth of Po) mouth of Danube (western end of Caucasus Mountains), 45°.

Approximate longitudes: west of Poland, 18° E.; Ural Mountains, 60° E.

I. RUSSIA.—Russia, which, including Finland, has an area of upwards of two million square miles, or twenty-three times that of Great Britain, occupies the whole of the east of Europe between the Arctic Ocean and the Black Sea.[1] In the north the shallow **White Sea** communicates with the former, and in the south the still shallower **Sea of Azof** with the latter. The western coasts all line the Baltic and its branches (**Gulfs of Bothnia, Finland**, and **Riga**), and in some places are bordered by a breastwork of small islands. On the south-east there is the inland **Caspian Sea.** Almost everywhere the coasts are low and flat.

The only great mountain range is that of the **Urals,** which extend for about 1,400 miles from north to south in the east, and these, though they rise in some places to upwards of 4,000 feet in height, slope up with such gentle undulations from the European plain, that their mountainous character cannot always be recognised. Especially is this the case towards the south, where one may follow the **great trade route** which crosses these mountains at the height of 1,000 feet, in about lat. 57°, **between Perm and Ekaterinburg,**[2] without ever perceiving that a mountain range has been traversed. Hence in this part the Ural Mountains do not form a political boundary, European Russia extending 200 miles beyond them. West of the Ural Mountains Russia may be regarded as one vast plain, though the highest part of it rises to 1,100 feet above sea-level. This elevation is reached in the central plateau of the **Valdai Hills,** from which the principal rivers of Russia radiate,[3] and from which the descent is so gradual that it is impossible to fix a boundary between plain and plateau. So level is the surface, that the water (as in Ireland) is apt to collect in marshes, and all the rivers occasionally overflow their banks. The **Pinsk** or **Rokitno Marshes**, traversed by the Pripet, a tributary of the Dnieper, cover an area greater than that of Ireland, but are now in process of being drained.

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[1] The large uninhabited Arctic islands of Novaya Zemlya or Nova Zembla ('New Land') and the Spitzbergen group are considered part of European Russia.

[2] Now connected by railway. See p. 224. [3] See p. 66.

In the south-east, north and west of the Caspian Sea, is a considerable **area below the sea-level**, the surface of the Caspian itself being eighty-three feet below that of the Black Sea.

From this structure of the land it results that the rivers of Russia are of much more importance than its elevations. Among these is the longest river in Europe, the **Volga**, whose basin is larger than any two countries in the continent except Russia itself, even that of one of its great tributaries, the **Kama** (left bank), being almost as large as France. All the rivers are rich in fish, among which the **sturgeon** of the Volga and its tributaries (as well as the Caspian) is especially prized.

As means of communication the rivers of Russia are of great value on three grounds. (1) Having a gentle fall, all the chief rivers and their larger tributaries are navigable almost to their source. (2) They flow from the heart of the country to all the Russian coasts. (3) They are easily connected by canals.[1] As against these advantages it must be noted that all the great rivers of Russia suffer from certain drawbacks—some from one, some from others. (1) The longest, the **Volga**, ends in an inland sea. (2) Of those which flow to the southern coast, the **Don** traverses the driest part of the country and hence is deficient in water, and the Sea of Azof, into which it falls, is itself too shallow for large vessels; the **Dnieper**, the **Dniester**, and the **Bug** all have to cross a granite plateau where the navigation is impeded by **rapids** (on the Dnieper over a course of twenty-three miles). Rapids also impede the navigation of the **Neva** above St. Petersburg. (3) The rivers of the north (**Northern Dwina** and **Petchora**), though fine full-flooded streams, traverse a part of the country less rich in products than those of the south, and terminate in a sea difficult of navigation. (4) All Russian rivers have their navigation stopped by ice for a longer or shorter period every year. Even at Astrakhan, at the mouth of the Volga, in the latitude of Bordeaux, the stoppage of navigation lasts for three months. Only the Don in some years escapes being frozen.

In addition to these difficulties besetting the inland navigation there is another hindrance to communication in Russia in the fact that the marshy character of a large part of the surface and the want of road-making material have been adverse to the making of roads, and hence the construction of railways is of peculiar importance in this country. In many parts of Russia travelling is still easiest in winter by means of sledges.

[1] See p. 67.

The **lakes** of Russia are relatively as important as the rivers. The principal lie round the Gulf of Finland.[1] **Finland** itself is a large granite plateau, the south of which is more thickly studded than any other part of Europe with lakes, both large and small, all very irregular in outline. **Lake Ladoga,**[2] between Finland and Russia Proper, the largest lake in Europe, is nearly as large as Wales. Next in size are Lakes **Onega** (south-east of Lake Ladoga) and **Peipus** (south of the Gulf of Finland). In the depressed area north of the Caspian are hundreds of small lakes without outlets, useful as sources of supply for **salt.**[3]

FIG. 29.—WINTER TRAVELLING IN RUSSIA.

As regards **climate,** Russia occupies that part of Europe where extremes of temperature are at their greatest [4] and rainfall is least. Astrakhan has a January twenty degrees colder and a July fourteen degrees warmer than that of London; and even Archangel, on the White Sea, which has a January more than ten degrees colder than Astrakhan, has a July as warm as that of the northern coasts of England. The rainfall, though scanty, occurs most abundantly in the summer months,[1] when most wanted, and hence, everywhere, except in the south-east, is sufficient for agriculture.

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[1] See p. 67. [2] 7,000 sq. miles in extent. [3] See Introd. p. 31. [4] See p. 68.

Vast as the country is, it has a **population** only two and a half times as large as that of Great Britain. The average density is only about forty-one to the square mile, and there are wide areas over which it is much less. The cold of the north and the drought of the south-east cause these regions to be very sparsely peopled, the greater part of the population being thus confined to the middle region, and especially to its western portion. The variations in density correspond to variations in the nature of the products.

Five zones of production may be distinguished. (1) In the extreme north is the region of the **toundras**, where the ground thaws in summer to the depth of at most one foot, and where the only inhabitants are a few thousand Lapps and Samoyedes, who wander about with reindeer herds, as in the north of Scandinavia. This region extends to the south of the Arctic Circle only in the extreme north-east. (2) To the south of that is the **Forest Zone**, where, besides timber, resin, potashes, and other forest products, the chief commodities of trade are furs (from sable, ermine, and other fur-bearing animals). This zone is bounded by an irregular line stretching, on the whole, south-eastwards from St. Petersburg. Forests were recently estimated to cover nearly forty per cent. of the surface of Russia, but they are now being rapidly thinned. In this zone the population is still scanty. (3) The next is the **Industrial Zone**, in the heart of Russia, where agriculture is extensively pursued, but manufacturing industries are also practised to a considerable extent, so that the agricultural products of this region would suffice to support the inhabitants for only about three-quarters of the year. (4) The **Agricultural Zone**, to the south and west of the Industrial, where the agricultural produce is not only sufficient for the inhabitants, but leaves a large surplus for other parts of the country as well as for export. The southern part of the agricultural zone is known as the **Black Earth Region**, from the colour of its soil, which is so fertile that, where it is found and the rainfall is sufficient, grain can be grown with less labour than in any other part of Europe.[1] This region is almost treeless, and its aspect resembles that of the Hungarian pusstas.[2] The part of the agricultural zone in the west of Russia embraces the whole of the former kingdom of Poland,[3] with part of the adjoining districts.

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[1] See p. 69.

It is in the last two zones, and more particularly in the latter, that the population is densest; but even in these the density is one of the smallest in Europe, both manufactures and agriculture being still very far behind. Only one-third of the entire surface of Russia is under cultivation; and the region in which there is the richest soil is that in which agriculture is pursued with least care.

(5) The last zone is that of the south and south-east, that of the true Russian **steppes**,[4] where agriculture can be pursued only with difficulty, and the inhabitants, largely Tatars and Kalmucks, dwell in tents, and roam over the arid plains with flocks of cattle, horses, and camels, as they do in the precisely similar parts of Central Asia.

The chief **agricultural products** of Russia are **wheat, maize,** and **oats**; but **flax** and **hemp** have greater importance here than in any other country in Europe, and their cultivation is here increasing, while in all other countries in Europe it is declining.

The **mineral wealth** of Russia is chiefly concentrated in the region of the Middle Urals, where excellent **iron, gold,**[5] platinum, copper, and precious stones are found in abundance. The **coalfields**, which exist on the Donetz (a tributary on the right bank of the Don), round Moscow, and elsewhere, are able to furnish large supplies of coal, but are as yet far from being adequately worked.

Relatively to the population, the **foreign commerce** is not great. Among the exports, **corn** sometimes makes up more than one-half of the total value, and next in importance are flax and linseed and wood. The principal imports are raw cotton, tea, and iron; and the steady increase which has gone on for many years in the first-mentioned import is an indication of the growth that is taking place in the manufacturing industry of the country.

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[1] The covering of black soil is not continuous, having been washed away to a large extent in the river valleys. [2] See p. 171. [3] See p. 184 *n.* 1.

[4] The term *steppes* is often used in a wider sense to include the whole of the treeless region of Russia.

[5] In the production of gold Russia is the rival of the United States and Australia.

Though inhabited by **many distinct races** speaking distinct languages, Russia is to a large extent as uniform in its population as in its surface. Three-fourths of the people are **Russians Proper**, and of the remaining inhabitants the most numerous are the **Poles** in the west, speaking an allied Slavonic language. **Lithuanians**, speaking another language more distantly related to the Russian, form the bulk of the population south of the Gulf of Finland. There are numerous **Germans** in the provinces south of the Gulf of Finland, and many of the towns in that region were founded by Germans before the rise of the Russian power. In Finland the majority of the people are **Finns**, but the most influential section of the population consists of the **Swedes** in the south. To these differences in race correspond for the most part the differences in **religion**. All the Russians Proper are adherents of the **Greek Church**, while the Poles and inhabitants of the Baltic provinces are mainly **Roman Catholics**, and the Finlanders are chiefly **Protestants**. In Poland the difference of religion is one of the causes of the still surviving feeling of hostility between Poles and Russians ; but the chief cause is to be found in the fact that Poland,[1] after having long been what Russia now is, the greatest of the Slavonic states, was, towards the end of last century, overthrown, and its territory divided by Russia, Austria, and Prussia.

In the great plain occupied by Russia extensive territories have always been under one rule ; but the growth of the present empire of Russia dates only from the second half of the fifteenth century, when the Grand Prince of Moscow conquered the western dominion of Novgorod.[2] From that time the growth of the Russian Empire has been almost constant, and, though it has received a check in Europe, it is still progressing as rapidly as ever in the plains of Asia, so that the territory of the empire now covers an unbroken area almost as large as the aggregate total of the United Kingdom with its colonies.

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[1] Poland once comprised not only what is now known as Poland in Russia (the part which was formerly called the Kingdom of Poland and had till 1864 a separate government with the Emperor of Russia as king), but also many of the adjoining provinces of Russia, together with Posen and other parts of the present kingdom of Prussia, and Galicia, Bukovina, and some smaller districts now belonging to Austria.

[2] This town, situated at the outlet of Lake Ilmen, in a river valley immediately to the west of the Valdai plateau, is now of no great importance, but was in the Middle Ages one of the principal centres of commerce in Eastern Europe and a leading member of the Hansa (see p. 156 *n.* 2). Its decline dates from the event mentioned in the text, and was completed by the foundation of St. Petersburg.

The **Czar, or Emperor, is an absolute monarch** everywhere except in Finland, which has a constitutional government, the Emperor of Russia being there a limited ruler with the title of Grand Prince.

Towns.—1. Coast towns.—The principal seaports of Russia are on the gulfs communicating with the Baltic.

ST. PETERSBURG (900), on the Neva, at the head of the Gulf of Finland, the present capital of Russia, yet a town of quite modern origin. It was founded by Peter the Great in 1703 in the midst of unhealthy marshes and dreary wastes, these disadvantages being counterbalanced in the eyes of its founder by the importance of having the seat of government on the sea, so as to facilitate communication with the more civilised powers of the West. Till the latter part of 1885, when a large ship-canal through the shallow end of the Gulf of Finland to the Neva was opened, it was not even a seaport except for small vessels, although its position as capital, the canals connecting it with all the navigable rivers of Russia, and the more recently constructed Russian railways had already made it the principal seat of commerce in the empire. Before the opening of the canal, **Cronstadt**, the impregnable fortress on a small island in front of St. Petersburg, the principal naval station of Russia, was indispensable as the port of St. Petersburg for large shipping. **RIGA**, at the mouth of the Western Dwina, on the gulf named after it, the old capital of Livonia, is the second seaport in Russia, and carries on a similar trade to the east German ports of Danzig, Königsberg, and Memel,[1] but above all in flax. **Revel**, an old German town, on the south shore of the Gulf of Finland, is of less importance. Opposite on the north shore is **Helsingfors**, the present capital of Finland, seat of a university.

On the Black Sea are **ODESSA**, a rapidly rising seaport between the mouths of the Dniester and Bug, the chief seat of export of the wheat and other grains of South Russia ; **Nikolaief**, near the mouth of the Bug, the chief naval station on the Black Sea ; **KHERSON**, near the mouth of the Dnieper ; **Kertch**, at the mouth of the Sea of Azof. **Taganrog**, at the head of that sea, a little to the west of the mouth of the Don, is accessible only for small vessels.[2] **Sebastopol**, in the west of the Crimea, is of importance not as a seaport but as a fortress, and till 1855, when it was taken by the allied armies of the English and French, was considered impregnable.[3] The rocky coast on the south-east of the Crimea, at the base of the Yaila Mountains, has numerous small seaports, and, being protected by this mountain range from the cold winds from the north,[4] is remarkable for the contrast which its rich vegetation, quite Mediterranean in its aspect, presents to the dreary steppes occupying the greater part of the peninsula.

Astrakhan, on the delta of the Volga, is the centre of trade with the Persian coast, and **Archangel**, at the mouth of the Northern Dwina, the principal port on the White Sea.

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[1] See p. 158.

[2] See p 180.

[3] Its fortifications, destroyed after the Crimean war, have since been restored.

[4] See Introd. p. 52.

2. Inland Towns.—Small wood-built[1] villages, thinly scattered over the surface, are a characteristic feature in the Russian plain; larger towns are few in number, and many of these have, like those of Hungary, the appearance of aggregates of villages rather than towns proper.

In the Volga basin the chief town is **MOSCOW** (750), in the heart of Russia, on the Moskva, where it begins to be navigable, formerly the capital of the country, still the chief seat of its manufacturing industry, and next after St. Petersburg the principal commercial centre of the empire; also seat of the most largely attended of Russian universities. It is largely built of wood, but the gilded domes and pinnacles of its churches, and in particular those of the Kremlin, the old seat of the Czars, a walled enclosure full of churches and palaces, give it a very picturesque and striking appearance. Between **Kaluga** and **Tula**, south of Moscow, is an important coal-field with iron ores, and the latter town is an important centre of the manufacture of arms and hardware. **Nizhni-Novgorod**, at the confluence of the Oka and Volga, has not a large stationary population, but is celebrated for its annual fairs, at which two continents[2] exchange their products, when thousands of booths cover the peninsula between the two rivers, and vessels of all sizes moored along the river banks for miles together are converted for the time being into shops and magazines. **Kazan**, at the point where the Volga turns southwards,[3] is an important centre of trade.

In western Russia the chief town is **WARSAW** (400), the former capital of Poland, and still the seat of a Polish university. With its suburb of **Praga**, it commands the principal passage of the Vistula, and hence is strongly fortified. **Vilna**, on the Niemen and the high road from Warsaw to St. Petersburg, is the chief town belonging to the old kingdom of Lithuania. **Dorpat**, west of Lake Peipus, is chiefly noteworthy as the seat of the easternmost German university, and hence the most advanced outpost of German civilisation.

In the south-west and south the chief inland towns are **KISHINEF**, the centre of the fertile government of Bessarabia; **KIEF**, on the Dnieper, and **KHARKOF**, between the Dnieper and the Don—all towns belonging to the Region of Black Earth.

II. ROUMANIA, a kingdom to the south-west of Russia, formed in 1861 out of the two principalities of Moldavia (in the north) and Wallachia (in the south-west), to which the plateau of the Dobruja on the right bank of the Danube was added in 1878. Physically it is for the most part a continuation of the Russian plain, but the northern portion is higher, and must rather be regarded as a continuation of the plateau of Galicia and Bukovina. The country is drained by numerous tributaries of the **Danube**, the principal being the **Sereth** and **Pruth**, the latter of which divides Roumania from Russia. The state is essentially agricultural, and produces enormous quantities of **maize** for export. The language is one of the corruptions of the Latin. The inhabitants are adherents of the Greek Church. The density of the population is little over 100 to the square mile.

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[1] The use of brick is extending. [2] Asia and Europe. [3] See p. 61 (2) (*b*).

The capital is **BUKAREST** (220), in the centre of the plain of Wallachia; and the other important towns are **Jassy**, in the centre of the plateau of Moldavia, and **Galatz**, the chief port near the mouth of the Danube, situated at the point where that river turns to the east.[1]

SCANDINAVIA.

Approximate latitudes: Hammerfest, 70½°; Throndhjem, 63½°; (south point of Shetland Islands), Christiania, Upsala (St. Petersburg), 60°; (Copenhagen), Malmö (Moscow), 56°.

Approximate longitudes: west of Norway, 5°; river Torneå, 24° E.

Norway and Sweden, the two kingdoms which compose this peninsula (the largest in Europe), are the most thinly populated countries of the Continent, the former having a population of only sixteen, the latter twenty-six to the square mile.

This small density is explained by the position and the **physical features.** A large part of the peninsula lies within the Arctic Circle, and though the western shores are under peculiarly favourable influences as regards climate,[2] the benefit of these influences is felt only to a slight distance inland, owing to the nature of the surface. **The greater part of the peninsula consists of a plateau** of hard rocks, which sinks abruptly down on the west or Norwegian side, and more gradually in a series of terraces on the east or Swedish side. The plateau increases in elevation from north to south,[3] and its surface is everywhere too high for cultivation. It is not even covered to any great extent with pastures, but chiefly with mosses and lichens, where it does not rise above the limit of perpetual snow. The aspect is extremely dreary. It is for the most part that of a vast elevated plain,[4] broken up into tabular masses by deep but narrow gorges, and dotted here and there with mountains, which appear like large rocks scattered over the surface, and nowhere form a mountain chain. The highest mountains rise from the highest part of the plateau, where the **Galdhöppigen** rise to upwards of 8,500 feet. In this region also are the most extensive glaciers, one, that of **Jostedalsbrae,** covering an area of nearly 400 square miles.

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[1] See Introd. p. 61 (2) (*b*).

[2] See Introd. p. 51, and p. 69.

[3] From about 1,000 to upwards of 3,000 feet.

[4] Called by the people themselves the *fjeld* (pronounced *fyel*).

On the west side the gorges that break up the plateau advance into the sea, and form the numerous steep-sided rocky **fiords**, which are so characteristic of the Norwegian coast. In front of the fiords is an almost continuous breastwork of rocky islands (so called **skerries**), the principal group of which is that of the **Lofoten Islands**, within the Arctic Circle. The Swedish coast, on the other hand, is almost everywhere flat, and so also are the numerous small islands by which it is bordered.

The **lowlands** of the peninsula lie chiefly on the gentler eastern slope of the plateau, and hence occupy a much smaller area in Norway than in Sweden. In the former country they constitute only about one-hundredth part of the whole surface (on the Skager Rak), while in the latter they occupy one-third. The **chief rivers** belong to the same slope, and almost all of them expand at intervals into long lakes with cataracts at their lower end, and hence, though they can be used for floating timber, are scarcely anywhere navigable. Lakes **Wener** and **Wetter,** the largest lakes in Europe after those of North Russia, occupy the lowland peninsula in the south of Sweden.

About three-fourths of the people of Sweden are dependent on **agriculture** and the rearing of live-stock, and in that country the export of grain (chiefly oats) exceeds the import. In Norway the rearing of live-stock is of more importance than the tillage of the ground. In the neighbourhood of the plateau the cattle are driven up in the summer to the highland pastures, while in winter they are poorly fed under cover. Besides agriculture the chief occupations of the people are, in Sweden, **wood-cutting** and **mining**; in Norway, wood-cutting, fishing, and shipping. Almost one-half of the **timber** of European commerce is derived from the Scandinavian peninsula. The forests[1] are chiefly **pine** and **fir**, and the wood is peculiarly hard and durable.[2]

The great majority of the **inhabitants** belong to a **Teutonic stock.** (See DENMARK, p. 191.) The northern half of both Norway and Sweden is chiefly inhabited in the interior[3] by a separate race, known as the **Lapps** or Finns, who number at most 50,000 (probably much less). Some of these live by fishing (**Sea Lapps**);

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[1] Two-fifths of the surface of Sweden is estimated to be covered with forests.

[2] Because the short summers make annual rings of the wood very close.

[3] Almost the only settled population in the interior of northern Sweden is that round the huge ironstone mountain of Gellivara—the ore from which is conveyed to the Luleå river by means of a railway, the most northerly in the world.

while others (the **Reindeer Lapps**) travel about with herds of reindeer, which feed on the mosses that cover the plateau, and which supply them with food, drink, and clothing, and in winter drag their sledges with great swiftness across the snow.

Both Norway and Sweden now acknowledge the rule of one king, but they have separate legislatures, and in every other respect a separate government.

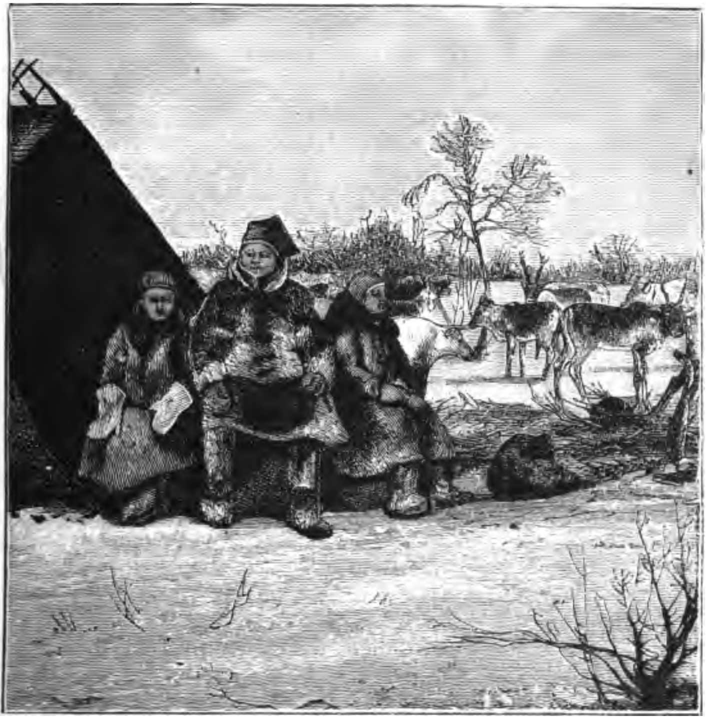

FIG. 30.—AN ENCAMPMENT OF LAPPS WITH REINDEER.

I. Sweden.—The more populous part of Sweden lies to the south of 62° north, and is divided into the territories of **Svealand**[1] in the north and **Gottland** in the south (the peninsula between the Kattegat and the Baltic).

In the former area are the principal mines of Sweden. In the valleys of the Osterdal and Westerdal, the district known as **Dalarne**—that is, the valleys—are the principal copper mines, and nearer the coast, a little to the north of the sixtieth parallel, are the celebrated ironworks of Dannemora, where the iron is not obtained by means of underground shafts, but is quarried in the open air.[1] In this area also lies the capital of Sweden, **STOCKHOLM** (205), beautifully situated at the lower end of Lake Mälar, which is connected by a canal with an inlet on the south, and thus placed in communication with a series of canals with locks connecting Lakes Wener and Wetter with the Baltic and the Kattegat. North-north-west of Stockholm, **Upsala**, the seat of a famous university, at which Linnæus was professor.

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[1] That is, the land of the Swedes proper.

The peninsula of Gottland is the principal agricultural region of Sweden. Here, on the Kattegat, at the mouth of the Göta-elf,[2] **Göteborg** (Gothenburg), the second largest town in Sweden, and the most important of its industrial towns (cotton spinneries, &c.; best known in this country through its matches). Opposite the coast of Gottland is an island of the same name, with **Wisby** on its west coast, now an insignificant town, but with extensive walls and various ruins, to call to mind the period when it was one of the chief towns of the Hansa.[3] Near the southern end of the peninsula, **Malmö**, the chief place of transit to Denmark and Germany.

II. **Norway.**—The chief area for the production of timber and corn crops in Norway is a small triangle in the north of the Skager Rak.

In this triangle lies **Christiania**, the capital of Norway, at the head of the fiord of the same name, the only town in Norway with more than 50,000 inhabitants. All the other chief towns are on the fiords of the west coast, and depend mainly on the fisheries. The principal market for fish is **Bergen**, the second largest town in Norway, on a fiord near the south; and the coasts between this inlet and the southern point of Norway (Cape Lindesnaes) are the principal scene of the herring fishery. Cod, on the other hand, are principally caught in the channel between the Lofoten Islands and the mainland, where they arrive in countless shoals about the beginning of February. Here, while the long Arctic night still continues, from 15,000 to 20,000 fishermen assemble every year with about 4,000 boats, and the fishery goes on till April. The cod are split open and dried on long lines of wooden framework (*stockfish*), or salted and dried on the cliffs behind the fishermen's huts (*klippfish*),[4] and the liver is preserved for the making of cod-liver oil. **Throndhjem** lies farther north than Bergen, on a comparatively broad fiord, affording some space for agriculture on its shores, and from it an easy road (now a railway) leads across the fjeld into the south-east of Sweden. **Tromsö** and **Hammerfest** are small towns still farther north, the latter in a latitude at which the winter night and summer day last for three and a half months. On the neighbouring cliffs eider-down is collected from the nests of the eider ducks.

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[1] Comp. the Erzberg, p. 176. [2] Elf, Swedish = river. [3] See p. 156 *n*. 2.

[4] That is, 'cliff fish.' The cod-fish of Norway are chiefly exported to the Roman Catholic countries on the Mediterranean.

DENMARK.

Denmark, which was long associated in history with Scandinavia, is a country of very different aspect. Both mainland and islands, with the exception of the more distant rocky island of Bornholm, are essentially a part of the great European plain. The mainland is separated from Sweden by the Kattegat, which communicates with the Baltic by means of three narrow straits —the **Sound**, between Sweden and Seeland; the **Great Belt**, between Seeland and Fyen;[1] and the **Little Belt**, between Fyen and Jutland. Of these, the Great Belt is the only one deep enough to be used by war vessels; but merchant vessels come and go by way of the Sound, which is not only the shortest route, but one in which sailing vessels are favoured in either direction by the prevailing westerly winds.

The mainland portion of the country, forming the peninsula of **Jutland** (with which a detached portion on the north, now completely separated by the **Liimfiord**, was connected in the west till 1825), presents the same contrast on the east and west as the more southerly portion of the same peninsula now belonging to Prussia. The west coasts are bordered by a chain of downs or sand-hills inaccessible to shipping, while the east coast is richer in harbours. On the west a barren sandy soil extends more than half-way inland, and thus reduces considerably the density of the population, but the eastern part of the peninsula and almost all the islands are fertile.

The **inhabitants** are mainly agriculturists, and many of the peasants own the land which they till. Relatively to population, more corn is grown and more cattle are reared in Denmark than in any other country in Europe, and different kinds of grain form by far the most important export.

Till the beginning of the sixteenth century Denmark was at the head of the Scandinavian countries, having both Norway and Sweden subject to its rule; but first Sweden acquired its independence (1526), and in the present century Norway was detached. Still, however, the inhabitants of these three kingdoms are much alike in language, religion, occupations, and customs. Norwegian is only a dialect of Danish, and Swedish is a language very closely allied. The inhabitants of all three countries are Lutheran

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[1] Often called *Funen* in this country, that name being a corruption of the German one. The Danish name (in the text) means 'fine,' or 'beautiful.'

Protestants in **religion**, and among the Danes, as among the Swedes and Norwegians, **education** is very generally diffused and highly advanced. There is an excellent university at Copenhagen.

Towns.—COPENHAGEN (235), the capital, chiefly on the island of Seeland, partly on the small island of Amager, arose on the best natural harbour on the Sound. Besides Copenhagen there are only two towns with a population of more than 20,000, one of which is **Frederiksborg**, the summer residence of the royal family, a short distance from Copenhagen. The other is **Odense**, on the west side of the island of Fyen. The towns in Jutland are all small places mostly at the head of the inlets, here called fiords, though unlike the steep-sided rocky fiords of Norway.

Distant Possessions.—The Faroe[1] Islands, north-west of Scotland, in lat. 62° N., are rocky islands, inhabited by a small number of people employed in sheep-rearing and fishing.

Iceland, still farther to the north-west, an island bisected by the 65th parallel of north latitude. It is nearly half as large as Great Britain, but, having an elevated surface, consisting chiefly of volcanic rock covered with mosses and lichens, and a summer too cold and damp for the cultivation of grain, is inhabited by only about 70,000 people, who derive a scanty subsistence from the rearing of sheep and horses, and from fishing. They are the descendants of old Norwegian farmers of noble birth, and still speak the old Norwegian language, the mother language of Danish and Norwegian, and retain to the present day the love of learning inherited from their ancestors, so that education is as general among the Icelanders as among the people of Sweden, Norway, and Denmark. The island is chiefly celebrated for its active volcanoes (**Hecla**, &c.), geysers,[2] and hot springs. Chief town, **Reikjavik**, on the south coast.

IBERIAN PENINSULA.

Approximate latitudes: middle of Pyrenees (Balkan Mountains), 43°;
Point Tarifa, 36° N.
Approximate longitudes: 9° W. to 3° E.

The Iberian Peninsula,[3] composed of Spain and Portugal, is the most westerly of the Mediterranean peninsulas, and that which contains the greatest proportion of land in the south. Nearly half of the peninsula lies to the south of the parallel of 40°, while only the southernmost of the minor peninsulas of Italy and the Greek portion of the Balkan Peninsula extend south of that line.

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[1] In Danish Fär Oër, that is, 'sheep islands.'

[2] See p. 36.

[3] So called from the Iberi, who formed a large proportion of its ancient inhabitants.

The **coast** is little varied in outline, except in the north-west, where the **rias** or fiord-like indentations, similar to the lochs of Scotland and Ireland and the gulfs of Brittany, are, like these, washed by high tides.[1]

The **surface** of the peninsula is one of the most elevated in Europe. The greater part consists of a large plateau, upwards of 2,500 feet in height, higher in the north than in the south, crossed from east to west by ranges of mountains (**sierras**). The eastern edge of this plateau is a semicircle, which descends in the north-east more or less abruptly to the valley of the Ebro, and farther south advances closer to the sea. In the south its boundary is marked by the **Sierra Morena**, which looks down on the valley of the Guadalquivir; while in the west the plateau is broken in upon by the narrow plains and terraced uplands of Portugal bordering the lower course of the Iberian rivers. In the north-east this plateau is connected with the **Pyrenees**, a lofty chain, with peaks rising about its middle (the **Maladetta** group) to upwards of 11,000 feet, and crossed by few passes as low as those of the Alps, so that the chain forms an admirable defensive frontier. The principal roads, and at present the only railways between France and Spain, are round its extremities. The long spurs from this range to the south greatly restrict the extent of the low grounds in the triangular basin of the rapid Ebro between the Pyrenees and the central plateau.

Another lofty and rugged range is less markedly connected with the central plateau in the south-east. The **Sierra Nevada**,[2] the snowy summits of which[3] are almost always visible in the clear air of Spain overlooking the sub-tropical gardens of the plain of Granada, runs north-eastwards towards the plateau without meeting it, the water-parting in this district being formed merely by high ground dotted with hills. On the south the Sierra Nevada is flanked by a long series of coast ranges of mountains, and between these and the plateau extends the only considerable tract of lowlands in the peninsula, the broad valley of the Guadalquivir.

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[1] The Mediterranean coasts are almost without tides (see p. 45).

[2] Spanish = Snowy Sierra.

[3] The highest peak, *Mulahacen*, is even higher than the loftiest summit of the Pyrenees.

On the plateau the water-parting between east and west runs generally near the eastern edge, so that most of the chief **rivers** have a long course westwards towards the Atlantic, while their basins are limited in breadth by the mountain ranges that cross the plateau. These rivers are—the **Douro**, between the Cantabrian Mountains (a continuation of the Pyrenees along the north coast) and the series of sierras which wind from Lisbon to the south-west frontier of Aragon,[1] forming in its eastern section the boundary between the old provinces of Leon and Estremadura, Old and New Castile; the **Tagus**, between this series of sierras and that of which the Sierra Toledo is the principal section; and the **Guadiana**,[2] between the latter and the Sierra Morena. None of the table-land rivers is of great importance for navigation, chiefly because they all have rapids caused by rocky shallows in their lower course where they have to pierce their way through mountain barriers. Hence they do not serve as a means of union for Spain and Portugal. In this respect they agree with the **Ebro**, but contrast with the **Guadalquivir**, which, having throughout a gentle flow, has been made navigable by dredging for large vessels to Seville, and can be ascended by boats far into the interior.

The rocks of which the surface of Spain is composed are, like those of Britain, very varied in geological date; and to this circumstance it probably owes its **extraordinary wealth in minerals**, exceeding that of most, if not of all other countries of Europe, though this wealth is far from being fully utilised.

The minerals are most abundant on and near the north and south boundaries of the plateau. In the north the Basque Provinces (in the south-east angle of the Bay of Biscay) are remarkably rich in **iron**, and **coal** is now known to exist in many districts, the largest field being in the Asturias. In the south are found the enormous deposits of **copper** at Rio Tinto, for which Huelva, in the south-west, is the place of export; farther east the **lead** ores of Linares, and within the plateau the **quicksilver** mines of Almaden. Sulphur and salt are also abundant.

The **climate**[3] is on the whole the driest in Europe. The edges of the plateau condense the moisture from the surrounding seas before it reaches the interior, which is hence to a large extent an arid steppe without trees, and fitted at most for sheep pastures. Only the north and north-west are abundantly supplied with rain, and hence have forests and agricultural products similar to those of Central Europe. On the other hand, the upland terraces and lowlands surrounding the plateau on the west, south, and east, are rich in evergreens (the **olive** and the **cork-oak**), in **wine**, and **southern fruits**, the cultivation of which, especially in the south, is almost wholly dependent on irrigation. The oases thus dotted here and there over vast barren expanses give to many parts of the peninsula an African aspect, on which account it is frequently described as **Africa in Europe.** The most unhealthy part of the peninsula is the marshy district on both banks of the Lower Guadalquivir. In almost all parts the principal grain is **wheat.**

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[1] The chief member of this series of sierras is the *Sierra de Guadarrama*.

[2] The first part of the names Guadiana and Guadalquivir (as well as of other rivers in Spain) is derived from the Arabic *wadi*, a river: see below, p. 195.

[3] Regarding the climate and vegetation of the Mediterranean countries generally see Europe, pp. 67–8.

For six centuries the Iberian Peninsula was subject to the dominion of Rome, and was then **thoroughly Romanised**, so that notwithstanding all the subsequent changes the **language** has remained essentially a daughter of the Latin. At the break-up of the Roman Empire (fifth century A.D.) Spain was overrun by the Teutonic tribes of the **Western Goths** (Visigoths), who settled among, but did not displace, the old Romanised inhabitants. A different sort of invasion took place early in the eighth century, when the Mohammedan **Arabs** or **Moors**[1] crossing over from Africa soon made themselves masters of most of the peninsula. Though gradually driven backwards they retained the southern provinces till the close of the fifteenth century. For a great part of this period these Moorish provinces were the home of the highest civilisation in Europe, and many beautiful buildings, adorned with the peculiar kind of ornamentation known as arabesques,[2] have survived as witnesses of this extinct civilisation; and the fine irrigation works of the south are a still more important relic of Moorish dominion. The gradual wresting of the soil of Spain out of Moorish hands took place from different centres, whence arose several independent states,[3] which were only in course of centuries merged in one. The final expulsion took place just after all the provinces of the present Spain except those in Moorish hands had been brought under one rule. Portugal, separated from Spain by a belt of inhospitable thinly populated country, has remained independent except for a period of sixty years (1580 to 1640). Both countries were at the height of their power at the time of the discovery of America, and their maritime situation encouraged them to undertake marine enterprises, which resulted in their making settlements and establishing their dominion in large areas of the newly discovered lands across the Atlantic, as well as in the East Indies and on the route thither round Africa. Of these only a small proportion remain connected with the mother countries.[1] In both countries the **government** is now a limited monarchy.

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[1] Really Arabs, but generally known as Moors because they came over from Morocco.

[2] The Mohammedan religion forbids the imitation of living things, whether animals or plants, and hence arose a style of ornamentation called arabesque after the Arabs, in which gracefully curved lines are the prevailing feature.

[3] The names of which still survive in those of the old provinces of Spain, but these old provinces have now given place to others of smaller and more equal size.

I. PORTUGAL, a country little more than one-third of the size of Great Britain, well adapted by its situation for maritime activity, but which shows scarcely a vestige of the enterprise which it once displayed by sea. Almost all the trade is in the hands of England, whence are derived most of the manufactured goods used in the country, which exchanges for them chiefly **wine** and **cork** (the bark of the cork-oak). About half of the surface is unproductive (yielding not even timber), the productive portion being confined to the vicinity of the coast and the banks of the rivers. The only mineral product is salt. There are only two important towns in the country, both seaports.

PORTO or **OPORTO**, at the mouth of the Douro, is the place of export of the wine to which it gives name (*port*) which is grown on the banks of the river. **LISBON** (200), at the mouth of the Tagus, the capital of the country, though like Oporto an ancient town, has quite a modern appearance, having been mostly rebuilt after its destruction by the tremendous earthquake of 1755. The small town of **Coimbra,** on the Mondego river, between the Douro and the Tagus, is the seat of a university.

II. SPAIN, a country more than twice as large as Great Britain, but with not much more than half the population. Only round the coast does the population exceed 100 to the square mile, and more than half the plateau (in the east and south) has a density of less than thirty to the square mile.

1. Catalonia,[2] in the north-east, has a soil not naturally fertile, but the inhabitants, the most energetic in Spain, have cultivated it with great care and have developed cotton and other manufacturing industries on a great scale.

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[1] See p. 216. [2] The names following the numbers are those of the old provinces.

On the coast **BARCELONA** (250), a town which has grown up round a rock that rises boldly above the richest plain on this part of the coast. It is the principal seaport as well as the principal seat of manufactures in Spain, and the second town in population.

In the north of this province, among the Pyrenees, is the small independent republic of **Andorra**, less than 200 square miles in extent.

2. **Valencia and Murcia**, the next maritime provinces to the south, are characterised by numerous short rivers, on the banks of which are still to be seen some of the finest examples of the old Moorish irrigation works; in the so-called **huertas**,[1] in which every field is surrounded by small canals.

The province of Valencia is the chief silkworm-rearing province in Spain; and the city of **VALENCIA**, occupying a delightful situation on the delta of the Guadalaviar is the chief seat of the Spanish silk industry. It is an old Roman town, and a little to the north the site of another ancient seat of commerce, *Saguntum*, is marked by the village of Murviedro.[2] In the south of the province, **Elche**, a celebrated oasis of date-palms; on the neighbouring coast the fine seaport of **Alicante**, from which are sent out the products of the rich plain of **Murcia**, as well as the esparto grass which covers a large part of the maritime strip. **Cartagena**, on the coast of the latter province, owes its foundation [3] to a fine bay which admirably adapts it to serve as a naval station, which is indeed its sole use, the want of communications with the interior preventing it from serving as a commercial seaport.

3. **Andalusia** is made up of the lowlands forming the valley of the Guadalquivir and the highlands in the south, which once formed the kingdom of Granada.

On the steep, rocky coast of the latter ancient kingdom are two seaports of some consequence, on account of their trade in southern fruits, &c.—**Almeria** and **Malaga**, the latter on a small strip of flat land where the mountains retire a little from the coast. Near the south point of Spain, on the Bay of Algeciras, **Gibraltar**, an almost impregnable fortress, commanding the entrance to the Mediterranean, held by the British since 1704. But it is on the plain of Andalusia that the chief cities of the province lie. It is on this sunny plain, where sugar-cane, cotton, and the cactus known as the prickly pear are among the objects of cultivation, and the agave, castor-oil plant, and olive even run wild, that we meet with the Spanish cities which still retain something of the splendour which they had during the time of the Moorish occupancy. **SEVILLE**, on the Guadalquivir, an active seaport as well as a rising seat of industry; **Cordoba**,[4] higher up on the same river, once a seat of Moorish dominion, but now greatly declined, partly in consequence of the fact that the Guadalquivir is no longer navigable so high up for vessels of large size; **Granada**, on a small plain near the head-waters of the Jenil[1] (trib. Guadalquivir), the last seat of Moorish dominion (taken by the Spaniards in 1492), and celebrated for its **Alhambra**, the old palace of the Moorish kings. The irrigated plain which surrounds it, here called by the Arabic name of the *Vega*, rivals in fertility and beauty the huertas of Valencia and Murcia. On a small island off the coast, a little to the south of the mouth of the Guadalquivir, stands the fortified seaport of **Cadiz**, founded by Phœnicians about 1100 B.C., the place of export of the wine which takes its name of sherry from the neighbouring town of **Jerez**.[1]

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[1] Spanish = 'gardens.'

[2] A corruption of Lat. *muri veteres* = 'old walls.'

[3] By the Carthaginians. It is the *Carthago Nova* of the Romans.

[4] Often spelt Cordova, the Spanish *b* between two vowels being pronounced very like a *v*.

4. The Northern Provinces of Spain.—Galicia, the Asturias, and Biscay, with a strip of Old Castile; a region covered with forest-clad mountains, noteworthy in the history of Spain as having always been the last refuge from invaders.

The most easterly province, Biscay, takes its name from the **Basques**, who are the last remnant of a population whose language has no recognisable affinities with any other known speech. The name Asturias, from Basque roots meaning 'rock waters,' serves at once to indicate the character of the land, and to reveal the fact that the Basques at one time extended farther west than their present seats.[2] All the places of importance are on the coast. **Ferrol**, on one of the rias of the north-west, is the principal Spanish naval station. **Santander and Bilbao**, on the north coast, two busy seaports, the latter exporting a great deal of iron ore from the neighbouring mines.

5. The Provinces of the Castiles, Old and New, the name of which is a memorial of the numerous castles or strongholds erected by the Christians to secure their successive conquests from the Moors, embrace the most desolate portions of the Spanish table-land, these occupying the east (round the head waters of the Tagus and Jucar)[1] and south (La Mancha). The somewhat more favourable tracts to the west produce a number of aromatic herbs which afford a suitable pasture for the migrating sheep (merinos), which are kept in summer on the table-lands of New Castile and Leon, while in winter they are driven down to the more sheltered valleys of Estremadura and Andalusia.

MADRID, the highest capital in Europe (2,200 feet), and the dreariest in situation, owes its elevation to the rank of capital (by Charles V. in the first half of the sixteenth century) solely to its central position; and **Valladolid**, in Old Castile, an earlier capital of Spain, owes its importance to a similar cause, being the centre of one of the minor table-lands of the peninsula. **Toledo**, forty miles south of Madrid, occupies a strong situation on a rock overhanging the Guadiana, and was one of the older capitals, but is now decayed; it has long been celebrated, as it still is, for its swords. Higher up is **Aranjuez**, the spring residence of the Spanish court.

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[1] Formerly spelt Xenil, Xerez, &c., *j* being now used in Spanish for the sound once represented by *x*. This sound is that of a strongly aspirated *h*.

[2] See p. 100.

6. **Aragon,** on the north-east of the Spanish tableland, is a thinly-populated province, in which the inhabitants display little of the energy shown by their neighbours of Catalonia in overcoming the defects of the soil.

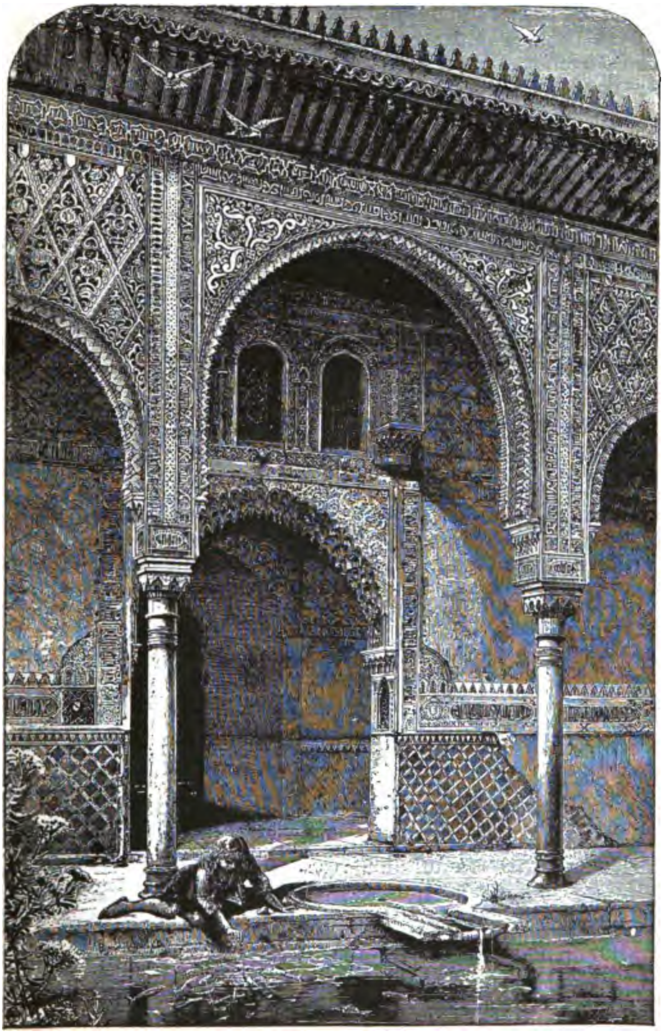

FIG. 31.—THE ALHAMBRA. (By the kind permission of Messrs. Hachette.)

Its only large town, **Zaragoza**, on the Ebro, has always been of great military importance, since it stands at the point whence the easiest route leads up to the central plateau (by the valley of the Jalon,[1] a route now followed by a railway).

7. **The Balearic Islands**, to the east of the Gulf of Valencia, are all more or less mountainous.

The principal town, **Mahon** (for part of last century in the possession of the British), stands in Minorca, the least mountainous of the three larger islands.

ITALY.

Approximate latitudes: (St. Etienne) Milan, Venice, 45½° N.; (north of Portugal) Rome 42°; (Murcia) Palermo (Athens), 38°.
Approximate longitudes: 7°–18½° E.

The mainland of Italy, a country one-fourth larger than Great Britain, is composed of a long peninsula almost filled by the Apennine Mountains, and a plain on the north, bounded by the Alps, and drained chiefly by the Po. Besides smaller islands, the kingdom includes also the two large mountainous islands of Sicily and Sardinia.

Almost everywhere the **Alps** descend rather abruptly to the north plain. Immediately at their base, and enjoying in an eminent degree the shelter afforded by them from cold north winds,[2] lie four beautiful lakes (**Maggiore, Como, Iseo, Garda**), amidst vegetation which will not flourish in the plain farther south. On the opposite side of the plain the **Apennines** descend inwards more gradually in a series of terraces, and the straight road connecting the towns of Rimini, Bologna, Modena, Parma, and Piacenza, the road anciently called the **Via Æmilia**, and now giving name to the Emilian provinces, marks very well the limit between highlands and lowlands. At Rimini this road, now accompanied by a railway, touches the coast, which it henceforth follows as far as the peninsula of **Gargano**, thus showing how close the Apennines advance to the sea in this part of Italy. It is on this side, a little to the north-west of the peninsula just named, that these mountains reach their highest elevation (a little under 10,000 feet) in the rugged province of the **Abruzzi**.

The **principal plains** of the peninsula are—(1) that of the Arno, in the north of Tuscany; (2) that of Campania,[3] round Naples; and (3) the larger but less fertile lowlands of Apulia, in the south-east. All of them are small by comparison with the great plain of northern or so-called Upper Italy. Unhealthy marshes occupy many parts of the coast, especially in the west and south.

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[1] See p. 198 *n*. 1.

[2] See Introd. p. 52.

[3] Not to be confounded with the Campagna round Rome.

The only lake belonging to the Italian Plains is the **Val di Comacchio,** at the mouth of the Po, south of the delta, a shallow lagoon cut off from the Adriatic by a low and narrow spit of land. It is valuable for its eel-fisheries and salt-pans. Of the **lakes of the Apennines** (**Trasimeno, Bolsena, Bracciano**), the two latter occupy the craters of extinct volcanoes.

Though mountains and highlands occupy so large a part of the area and have been to a large extent stripped of the forests that once covered them, the **productive surface** of the country is relatively large, hill pastures being very extensive. Only about two-fifths of the surface, however, is suitable for agriculture, and Italy is among those countries which have to import grain; while its dearth of coal and iron prevents it from taking a high place in manufacturing industry, and necessitates a large import of manufactured goods. The products on which it chiefly depends for **export** are **wine, oil** (from the olive), and above all **raw silk.**

Among **minerals, iron,** though not abundant, is found of excellent quality at various places (island of Elba, &c.) A fine kind of **marble** is quarried at Carrara, among the Apuan Hills, in North Italy; but the **sulphur** of Sicily and Southern Italy makes up at least half the value of the mineral produce of the kingdom.

Though apparently formed by nature to constitute a single state, few countries have had a greater variety of settlers and dominions within their boundaries than Italy. In ancient times, numerous flourishing **Greek Colonies** studded the shores of the southern half of the mainland, and both **Greeks** and **Carthaginians** formed settlements in Sicily, while **Kelts,** breaking in through the passes across the Western Alps,[1] occupied the northern plains. Ultimately, however, the whole country was subdued by the strong hand of Rome, and was kept under one rule for more than 500 years. But on the downfall of Rome, in the fifth century A.D., Italy became a prey to numerous foreign invaders, and once more broke up into a number of different states. A German tribe, the **Lombards**[2] (**Longobardi**), settled in the northern plains, and others advanced farther south. At a later date **Arabs** (Saracens) and **Normans** settled in Sicily and southern

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[1] See p. 164.

[2] Whence the name Lombardy.

Italy, and Germany, France, and Spain, all in turn invaded Italy and seized on parts of it, which they retained for a longer or shorter time. Throughout the greater part of the Middle Ages, and for centuries after, the country was broken up into a large number of independent cities and small states, yet this is one of the most brilliant periods of Italian history. The favourable situation of Italy in the middle of the Mediterranean gave this country the command of the trade between the east and west, and the wealthy trading republics of Genoa and Venice, for example, had settlements even on the Black Sea. Their trade and their glory declined, however, when by the discovery of the New World Italy came to be no longer in the centre of the highways of commerce.[1] The political unity of Italy was completely effected only in 1870, when the last remnants of the States of the Church were annexed to a kingdom, the original nucleus of which was the kingdom of Sardinia, made up of the island of that name together with the north-western portion of the mainland. The **government** is a limited monarchy.

The **population**, upwards of 250 to the square mile, is one of the densest in Europe, and there is a considerable annual emigration, principally to the republics of South America. The Italian **language** is the least modified of all the descendants of the Latin. The **religion** is Roman Catholic. Elementary **education** is rapidly extending, but great numbers of the inhabitants, especially in the south, are still unable to read and write.

Italy is divided into provinces, the average size of which is about the same as that of a French department, but some of the names of the older divisions (Venetia, Lombardy, &c.), still survive as those of groups of provinces called territorial compartments.

Towns and Districts.—1. The Northern Plains.—Besides the Po and its tributaries, these plains are drained by numerous other rivers, the chief of which (Adige, Brenta, &c.), enter the Adriatic to the north of the Po. Numerous irrigation and some navigable canals are led from these streams, and the region is thus one of the best watered and most productive in Europe. The abundant sediment brought down from the Alps by the rivers is constantly extending the land seawards, particularly in the region of the Po delta, where Adria, in ancient times a coast town from which the Adriatic obtained its name, is now more than twenty miles inland. Though sharing in the benefit of a warm climate enjoyed everywhere in the Mediterranean region,[1] this part of Italy has summers too moist and winters too cold for the cultivation of the olive and the members of the orange tribe. The summers are warm enough, however, for the growth of **maize** and **wine**, and for the rearing of **silkworms**; the vines being often hung in festoons between mulberry trees, on the leaves of which the silkworms feed. The silk thus produced furnishes the material for the making of **silks** and **velvets**—the chief manufacturing industry, not only of these provinces, but of the whole kingdom. The pastures are rich, and are the mainstay of another leading industry of the region, the making of **cheese**. The district round Lodi, where the so-called Parmesan[2] cheese, is made, is famous for its six crops of grass in the year. **Rice** is grown on the marshy depressions on the banks of the Po. Large towns are numerous.

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[1] Comp. British Isles, p. 73.

On the Po, before it enters on the plains, stands **TURIN** (230), capital of the former kingdom of Sardinia, afterwards the first capital of the kingdom of Italy; situated at the point towards which three passes across the Alps converge, and now on the railway which pierces the Alps at the Mont Cenis tunnel. Lower down on the Po, **Piacenza**, at the point where the banks of the river begin to be marshy, and hence at the lowest point at which the river could be conveniently bridged, so that it became not only the terminus of the Æmilian road, but also the meeting-place of the roads from Italy and Switzerland. Still lower down on the Po is **Cremona**, once noted for its violins. **MILAN** (300), in the centre of the rich plain between the Ticino and the Adda, occupies a similar situation to Turin, at the focus of the chief passes leading from the north across the Alps, now on the railway which pierces these mountains by the St. Gothard tunnel, and hence an important centre of trade between Italy and Central Europe. In the Middle Ages the seat of a grand-duke, it is now of importance chiefly as the town in which manufacturing industry is most highly developed in Italy. Its marble cathedral is also celebrated.

On the east and west of Lombardy, lines of defence are created by broad rivers with marshy banks. On the west the line is that of the Ticino, near the mouth of which is the town of **Pavia**, which has in consequence been a frequent scene of battle. On the east the lines referred to are those of the Adige and the Mincio, and on these rivers stand the fortresses of the famous **Quadrilateral** (Mantua, Verona,[3] Peschiera, and Legnago).

On the coast stands **VENICE**, built on a hundred islands[4] behind a line of low sandbanks (*lidi*), due to the joint action of rivers and sea-currents, but now strengthened by walls, while the openings between them (narrow enough to be stopped by the sinking of a single vessel) are protected by forts. In this easily defended situation Venice was founded in the fifth century A.D. by refugees from neighbouring Roman towns sacked by the Huns, and through its admirable position for commerce (the valley of the Adige and the Brenner Pass serving as a communication between it and Central Europe), it soon became a thriving city, and ultimately for a time the centre of commerce in Italy. Art and luxury followed the attainment of wealth and power, and the beautiful buildings whose foundations rest on piles and are washed by the arms of the sea which in this remarkable town take the place of streets, are the admiration of all the cultivated peoples of the west. It is still a busy seaport, and has regained a little of its former prosperity since the opening of the Suez Canal. On the Brenta, **Padua**, the seat of a university long famous.

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[1] See Europe, p. 67.

[2] Not made at Parma, as the name would imply.

[3] Verona defends the mouth of the valley leading down from the Brenner Pass (see p. 165).

[4] Now connected with the mainland by a railway bridge more than a mile in length.

Of the towns on the Æmilian road already mentioned, **Parma** and **Modena** are noted in history as the seats of independent dukes, whose territories were annexed to the kingdom of Italy only in 1860; **Bologna** is the seat of one of the oldest of European universities, once specially famous as a school of Roman law; **Ravenna**, though now an unimportant inland town, was the Venice of ancient times, a city built on islands, and hence on account of its strength made by Augustus a naval station, and during the time when the northern barbarians were overrunning Italy chosen as the seat of government by some of the later Roman emperors, and afterwards by the exarchs or governors of the Italian territory which remained under the rule of the emperors of the East.

2. **Middle Italy and the Riviera.**—The Riviera is the name given to that sheltered strip of coast, partly in France and partly in Italy (**San Remo**), where invalids from all parts of Europe come to enjoy the benefit of a mild climate amidst charming scenery and a sub-tropical vegetation. From the ancient inhabitants this strip of coast has the name of **Liguria**.

GENOA, the former rival of Venice, and now the chief seaport of Italy, built tier above tier in face of a fine bay, which lies at the mouth of the **Bochetta Pass**[1] across the Apennines, once the most important trade-route in this part of Italy, but now superseded by a railway. In recent times Genoa has prospered even more than Venice, from the fact that all the railways of the north converge here (the line piercing the Apennines in a tunnel situated a little to the east of the pass just mentioned).

In **Tuscany** are several cities formerly celebrated, if not still of great importance. Chief of these is **FLORENCE**,[2] on the Arno, in the midst of the Tuscan lowlands, which are broken up by ranges of hills

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[1] See Introd. p. 61 (3) (*b*).

[2] The winter temperature of Florence is 5° Fahr. higher than that of Bologna, fifty miles to the north. (See Introd. p. 52 and comp. British Isles, p. 75). Before the introduction of railways the pass of Pietra Mala or La Futa (3,000 ft.), on the road from Florence to Bologna, was one of the most frequented in the Apennines, but the railway between the two towns (less direct in its route) now ascends the valley of the Reno and crosses the Apennines farther to the west.

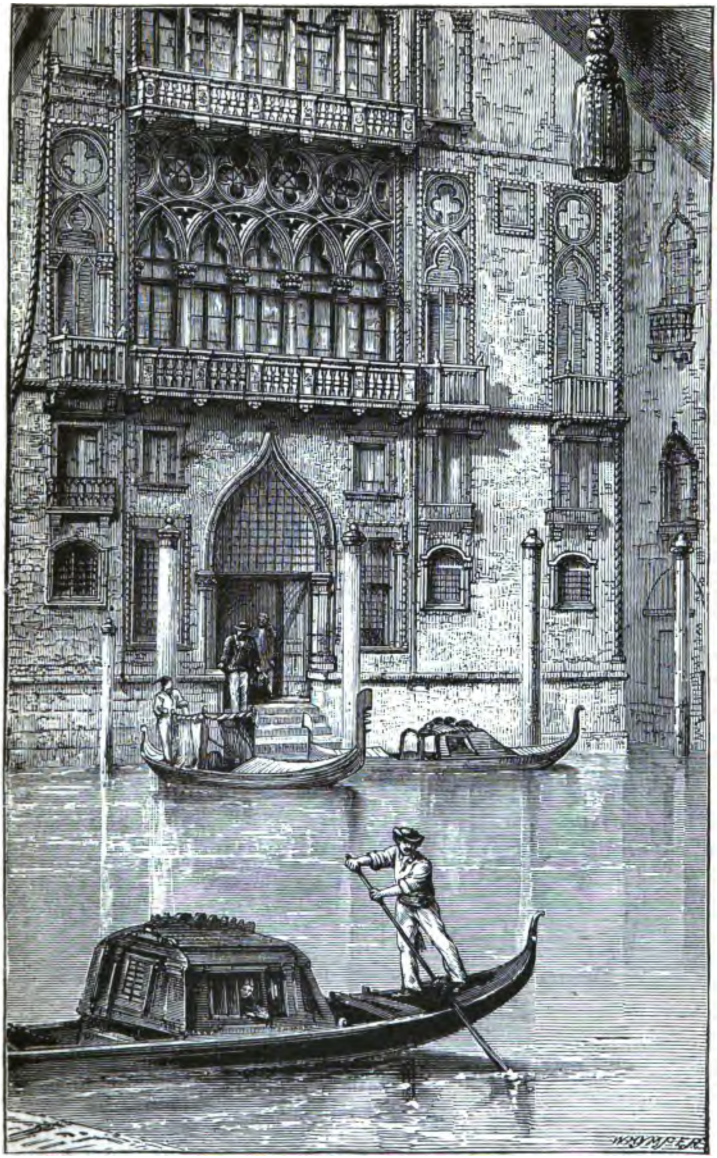

FIG. 32.—FRONT OF A VENETIAN PALACE, WITH GONDOLAS, OR VENETIAN BOATS, IN THE FOREGROUND.

into a number of small plains, each as carefully watered and as fertile as the plains of Lombardy, but enjoying under the shelter of the Apennines a much warmer climate, so that the olive gardens are the most celebrated in all Italy. A city of comparatively recent growth, it was during the fifteenth and sixteenth centuries one of the most powerful in Italy, and, being then a favourite home of artists, is famous for its art treasures. Straw-plaiting and silk manufactures are the principal industries at the present day. **Pisa**, near the mouth of the Arno, before the rise of Genoa and Florence a great seaport and powerful republic, is noteworthy on account of its university and of the old buildings, splendid relics of the Middle Ages, enclosed within its walls. It is now inaccessible to sea-going vessels in consequence of the silting up of the mouth of the river. To take its place as a seaport the Florentines constructed on the coast farther south the harbour of **Leghorn**.[1] Between Leghorn and Genoa is the fine natural harbour of **Spezia**, the chief naval station of Italy. Among the thinly populated and poorly watered provinces of South Tuscany, **Siena**, though no longer a populous town, is worthy of mention as having also been in former times the seat of a powerful republic.

In **Latium, Umbria, and the Marches**, which are nearly covered by the Apennines and its branches, there is only one town with more than 50,000 inhabitants. That town is **ROME** (275), on the Tiber, since 1870 the capital of the kingdom of Italy, in succession to Florence; in ancient times the capital of the Roman Empire, of which the ruins of the Forum, the Pantheon, and the Colosseum are symbols; afterwards the seat of the popes and as such the head of Western Christendom, which is still more conspicuously symbolised by the magnificent dome of St. Peter's on the right bank of the Tiber. Founded (it is said in the eighth century B.C.) on the last hills bordering the Tiber, at a point to which the river could be ascended by small ships,[2] it soon became the meeting-place of the chief roads across the Apennines, and hence grew in size and power. It is now the chief resort of artists, and is visited on account of its historical associations by people from all parts of the civilised world. The country round, the **Campagna**, in ancient times carefully cultivated, has fallen out of cultivation and is now a barren plain rendered almost uninhabitable by malaria. Still more pestiferous are the **Pontine Marshes**, in the extreme south of Latium, uninhabitable even in ancient times. On the east coast is the seaport of **Ancona**.

3. **Lower Italy**, comprising the wild region of the **Abruzzi**, the sheep pastures of **Apulia** in the south-east, the mountainous **Calabria** with its malarial coasts in the south-west, and in the west the fertile plain of Campania.

On the coast, on a beautiful bay fronting the small islands of Ischia and Procida, stands **NAPLES** (460), the most populous city in Italy with a considerable silk industry, till 1860 the capital of a kingdom which embraced the whole of Lower Italy and Sicily. Overlooking the same bay is **Mount Vesuvius**, the only active volcano on the mainland of Europe. Its first recorded eruption (A.D. 79) overwhelmed with its ashes the cities of **Herculaneum** and **Pompeii**, the disinterring of which in the present day has brought to light many Roman remains of the greatest interest. **Capua**, on the Volturno, in ancient times the chief town in Campania, has sunk into complete decay, chiefly in consequence of the swamps now existing on the banks of the river. On the coast of Apulia is **Brindisi**, in ancient times, under the name of *Brundusium*, the place of transit to Greece, and now again an important seaport as the terminus of the land-route (through the Alpine railways) to Alexandria and the East.

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[1] Ital. *Livorno*.

[2] See Introd. p. 61 (1) (*b*), (3) and (4).

4. **Sicily and Sardinia.**—Though nearly equal in size, these islands present a great contrast in natural fertility and hence in populousness.

The former has considerable mountains, only in the north; most of its surface is covered with **wheatfields** and groves bearing **southern fruits.** Three towns in it have at least 100,000 inhabitants—**MESSINA**, on the straits of the same name (under which it is now proposed to pierce a tunnel); **CATANIA**, on a charming plain at the foot of Mount Etna, on the east coast, and the beautiful **PALERMO** (200), on the north coast. **Mount Etna** is an active volcano, rising with an exceedingly regular and gentle slope to about 11,000 feet in height. The anciently celebrated city of **Syracuse**, near the southern end of the east coast, is now only a gloomy and dirty town of no importance. The island altogether, though less than one-third of the size of Ireland, has a population more than half as great.

FIG. 33.—A STREET IN POMPEII: VESUVIUS IN THE DISTANCE.

Sardinia has only one plain of importance, stretching from north-west to south-east, between the **Bay of Oristano** and that of **Cagliari**, which latter takes its name from the chief town in the island. **Oranges** are an important product, and in the south-west are rich mines of silver-yielding **lead** and of **zinc.**

Midway between Sicily and the coast of Africa lie the rocky limestone islands of the Maltese group (**Malta**, **Gozo**, and **Comino**), inhabited by a mixed population speaking a corrupt Italian, but held by the British since 1800.

The area of the whole group is about two-thirds of that of the island of Anglesey. On Malta is the strong fortress of **La Valletta**, which carries on a large trade with North Africa, and is an important coaling station.

THE BALKAN PENINSULA.

Approximate latitudes: (Naples) Constantinople, 41°; (Murcia, Palermo) Athens, 38°.

Approximate longitudes: west of Bosnia to the Bosporus, 16°–29° E.

This name is applied to the easternmost of the three Mediterranean peninsulas, lying between the Adriatic and Ionian Seas on the west and the Black Sea and the Ægean on the east; on the north we may assume as the boundary the lower Save and Danube, as far as the south point of the Dobruja, thus excluding Roumania.

The whole peninsula, along with the adjacent islands, may be described in general as **a land of mountains**, partly depressed below sea level, so that the higher parts on the margin have in some cases got cut off as islands separated by valleys and passes now submerged, and in other cases run out to sea as peninsulas between which the lower parts of former land valleys now form deep gulfs. A rise of the sea-bed to the extent of about 100 fathoms would bring almost all the smaller islands into connection with the mainland.

So closely are the mountains crowded together that communication between different plains and valleys is always somewhat difficult, and hence the main routes marked out by nature for intercourse have in this part of Europe a special degree of importance. Two great roads following such natural lines proceed from different points in the south to the heart of the peninsula, neither route rising at any part more than 2,500 feet above sea-level. One of these starts at Constantinople, in the south-east, and, traversing one of the largest plains of the peninsula, ascends the valley of the **Maritza**,[1] passes the important towns of Adrianople and Sofia, and after crossing the water-parting descends into the basin of the **Morava**, and from the town of Nish follows that valley till it approaches the Danube; the other, starting at Salonica, in the north-west of the Ægean Sea, ascends the valley of the **Vardar** as far as lat. 40° N. (Üsküb), and after crossing a water-parting only about 1,700 feet in height descends into the valley of the **Bulgarian Morava,** by which it proceeds to Nish. There it joins the road from the south-east. The depressions followed by these roads, depressions along which railways are now in course of construction, mark off **the mountains of the peninsula** into **three groups**—a western, a north-eastern, and a south-eastern.

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[1] The largest river in the peninsula except those on the northern frontier.

In the western group the mountains, where they form chains at all, trend for the most part more or less north and south. The principal range is that of the **Dinaric Alps,** a limestone chain having the same character and aspect as the Karst region,[1] backed by plateaux of a similar nature, extending from north-west to south-east along the frontier of Bosnia. Towards the south they merge in the irregular mountain groups of Montenegro,[2] where some of the summits rise to the height of 8,000 feet. Farther south the **Lake of Skodra** or **Scutari**[3] and the valley of the **Drin** form a depression between the mountains of Montenegro and the short range of the **Shar Dagh,** which, running north-east and south-west, attains as great an elevation as the former; and between this range and the lower range of the **Kara Dagh,** to the north-east, the road and railway from Salonica are continued northwards from Üsküb.

To the south of the Shar Dagh the general trend of the mountains becomes more or less north-west and south-east. Such is the direction of the **Pindus** chain, the principal chain in Greece, forming the western boundary of the plain of Thessaly or valley of the **Salamvria.**[4] Farther south the mountains, many of them 6,000 to 8,000 feet in height, become still more thickly crowded together. North of the Gulf of Corinth the celebrated **Mount Parnassus,** visible from almost all parts of Greece, rises to a height of more than 8,000 feet. The peninsula of the **Morea** or Peloponnesus, south of the Gulf of Corinth, consists of a ring of mountains (enclosing the elevated province of **Arcadia**) with finger-like ranges radiating outwards to the ends of the minor peninsulas in the south-east and south (in **Argolis**, **Laconia**, and **Messenia**). The loftiest of these outer ranges is **Taygetos**, which terminates in **Cape Matapan**, in the extreme south of Greece.

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[1] See p. 177, *n*. 1.

[2] An Italian name signifying 'Black Mountain.' The native name, *Chernagora*, and the Turkish name, *Kara Dagh*, have the same meaning. The Italian name became current throughout Europe at the time when the Italians were the chief traders in the Mediterranean.

[3] An Italian form. See previous note.

[4] The *Peneios* or *Peneus* of the ancients.

In the two mountain groups east of the Salonica-Belgrade road the trend of the mountains where they form a chain is more or less east and west. The most important of these chains is that from which the peninsula takes its name, the **Balkan Mountains**, a chain which for the greater part of its course separates the principality of Bulgaria from Eastern Roumelia, and forms the water-parting between the rivers on the north and south. Like the Pyrenees, this chain is remarkable for the great height of its passes relatively to the general height of the mountains, few of these—except in the east, where the chain sinks in elevation—being under 5,000 feet above sea-level. In the middle of the chain the most important is the **Shipka Pass**, between Philippopolis and Tirnova. West of the **Isker**, the only river which cuts across the chain (in a narrow defile affording no convenient route for traffic), the Balkans become less continuous, and trending more to the north-west almost merge in the mountains of Eastern Servia, which form a continuation of the Carpathians to the south of the Danube. From the Balkans these latter mountains are separated only by the valley of the **Timok**. The chief route between Bulgaria and Eastern Roumelia is situated west of the Isker.

In the angle between the routes from Constantinople and Salonica to Nish, the most important chain is that of the **Rhodope Mountains**, which run parallel to the Balkan at a lower elevation.

For **inland navigation** the frontier rivers on the north are much more important than any of the rivers in the interior; but a great hindrance to the navigation of the Danube exists in what is known as **The Iron Gate**, a narrow defile seventy-five miles in length, with rapids and rocky shallows, occurring where the Carpathians cross from Hungary into Servia, and terminating at Orsova, the Iron Gate proper, the most dangerous point in the whole defile, at the commencement of the Roumanian frontier.

The **climate** of the Balkan Peninsula is subject to greater extremes than that of the other peninsulas of the Mediterranean, and especially extremes of cold, in consequence of the fact that some of the plains and higher inland valleys are exposed to the cold winds from the north-east. In most parts the rainfall is abundant and pretty equally distributed throughout the year. Only Greece and the western coasts have the nearly rainless summers characteristic of the Mediterranean, with the characteristic thick-leaved orange and olive trees.[1] In all parts the summer is warm enough for **maize** and **tobacco**, in the warmer valleys, also for **cotton**, and the fertile soil of the plains renders cultivation easy.

Forests of beech and oak, and, on the higher mountains, of firs and pines still cover vast areas, though in many parts (especially the north-west) they have been cleared, sometimes greatly to the injury of the country. The hill pastures, generally too meagre for horses and cattle, are better fitted for the smaller kinds of live stock, such as **sheep** (above all in Servia and Greece) and **goats** (in Greece, Bosnia, and Servia); and in some parts, particularly in Servia, immense numbers of **pigs** are reared on the mast of the forests. Horses and cattle are chiefly reared in the lower parts of Bosnia and Bulgaria, along the Save and the Danube.

Minerals are widely diffused but not much worked.

The density of the **population** is estimated at about seventy to the square mile, a low degree of density, ascribable partly to the extent of unproductive surface occupied by mountains, partly to the natural obstacles in the way of commerce, but chiefly to the long misrule to which the region has been subjected under the Turks. The densest population is in the low grounds north-west of Constantinople.

Judged by language, the inhabitants of the peninsula may be divided into four principal groups: (1) **Slavs,** making up more than half of the entire population, occupying all the northern regions, and divided into Bulgarians in the east, Servians in the west (in Bosnia, Herzegovina, and Montenegro, as well as in the kingdom of Servia); (2) **Arnauts** or **Albanians,** descendants oi the ancient Illyrians, chiefly in the region between Greece and the area occupied by the Slavs—in the southern part of Albania (Epirus) Greek is now spoken, and hence the Greeks claim to have this portion of the province of Albania added to their kingdom; (3) **Greeks** in the kingdom of Greece, in the lowlands behind Constantinople, on the coast of the Ægean Sea and the Sea of Marmora, on the islands of the Ægean Sea and in Crete;

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[1] See p. 68.

(4) **Turks**, the smallest division, mostly scattered over the area under Turkish rule as owners of the soil. Besides these there are many **Jews** and **Armenians** as traders in the towns.

As regards **religion**, the Slavs, except in Bosnia, and Greeks are for the most part adherents of the **Greek Church**, the Turks and a portion of the Albanians and Bosnians **Mohammedans**.

The highly mountainous character of the peninsula has always been an obstacle to its being under one political rule, and the peninsula has in fact never formed a single state by itself. At one period it formed a part of the Roman Empire, and later it was almost entirely brought under the sway of the Turks, when these were at the height of their power in the sixteenth and seventeenth centuries. Only Dalmatia remained in the possession of Venice till, about 1800, it fell into Austrian hands. Since the seventeenth century Turkey has been constantly losing ground, and now the peninsula is divided among four independent states, besides the coast strip of Dalmatia (part of the Austrian Empire), the provinces of Bosnia and Herzegovina under Austrian administration, though still nominally part of Turkey, and the principality of Bulgaria, which is tributary to Turkey, but otherwise independent.

States and Towns.—1. European Turkey, extending from the Adriatic and Ionian Seas to the Black Sea between Greece and the northern States. The total area now directly under Turkish rule is only about two-thirds of that of Great Britain. The sovereign, who bears the title of Sultan, is an absolute monarch. By the Turks he is regarded as the *Caliph* or successor of Mohammed, and head of the Mohammedan religion (see p. 221).

CONSTANTINOPLE (875), the capital of the whole Turkish Empire, occupies one of the most favourable sites in the world, where the land route for the commerce between Europe and Asia is crossed by the sea route between the Black Sea and the Ægean,[1] and where the narrowness of the straits at either end of the Sea of Marmora renders defence easy. A small inlet from the Straits of Constantinople or the Bosporus,[2] forms an excellent natural harbour,[3] and confines the Turkish town proper, with its domes and minarets, its narrow streets and its gay bazaars,[4] to a triangular peninsula between it and the Sea of Marmora. The suburbs of **Pera** and **Galata**, occupied by foreigners

[1] See Introd. p. 61 (3).

[2] Gr. = 'Passage of the ox,' equivalent to Ox-ford.

[3] The so-called Golden Horn.

[4] A Persian word applied in the East to a place where goods are exposed for sale. It is usually something like what in our towns is called an arcade—that is, a narrow street with rows of shops on either side and arched over, but frequently it is open or only shaded by some light material laid from roof to roof.

from Western Europe, and wearing a Western aspect, lie on the other side of this harbour. The importance of this site was early recognised by the Greeks, who founded here the colony of Byzantium in the seventh century B.C. This town was completely superseded by the city founded by and named after Constantine the Great, early in the fourth century A.D., the city which continued to be the capital of the Eastern Roman Empire till it was taken by the Turks in 1453.

Gallipoli, on the strait of the Hellespont (Dardanelles [1]), is the chief station of the Turkish navy. **Salonica**, the second seaport in rank in the Balkan Peninsula, is likewise the second town in population; and the only other town with more than 50,000 inhabitants is **Adrianople**, situated at the point where the Maritza is joined by a tributary on the left bank,[2] the valley of which leads up to the passes across the Eastern Balkans, and accordingly at the meeting-place of important roads from the north-east and north-west.

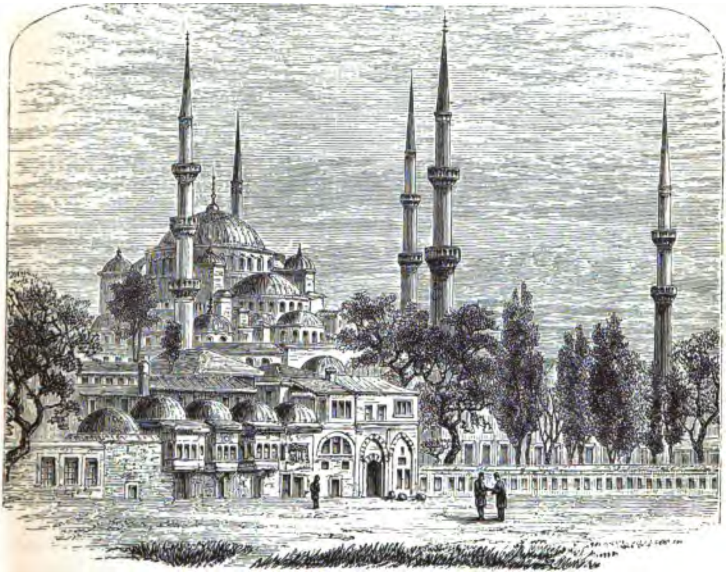

FIG. 34.—MOSQUE OF SULTAN ACHMED, CONSTANTINOPLE.

In the western province of **Albania**, chiefly a region of wild and precipitous limestone mountains, the most noted town is **Yanina**, occupying the site of the anciently famous oracle of Dodona, on a fruitful tableland of Epirus.

Of the **islands** subject to Turkey, the largest is **Crete** or **Candia**, facing the mouth of the Ægean Sea. Only its north coast is provided with numerous bays; and on one of these, near the western end, stands its capital, **Candia.**

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[1] Properly the name of the fortresses erected by the Turks on both sides of the strait.

[2] The Tunja. See Introd. p. 61 (2) (*a*) and (3).

2. **Bulgaria** is a principality with which the province of **Eastern Roumelia** is now practically united. The independence of the principality dates only from the Treaty of Berlin, 1878. The capital of the principality is **Sofia**; the chief town in Eastern Roumelia, **Philippopolis.** On the coast of Bulgaria is the fortified seaport of **Varna,** and on the right bank of the Danube—which, unlike the Roumanian or left bank, is high and not subject to inundation—are several towns of importance: **Widdin, Nicopolis, Rustchuk,** &c.

3. **Servia,** a kingdom situated to the west of Bulgaria. The inhabitants made themselves partly independent of Turkey early in the present century, and the independence was made complete and the territory of the state enlarged by the Treaty of Berlin. The capital is **Belgrade,** a strong fortress at the confluence of the Save and the Danube.

4. **Bosnia** and **Herzegovina,** with the district of **Novi-bazar,** lie to the west and south of Servia. They are rich in minerals, and have one or two fertile valleys, but their resources await development. The capital is **Serayevo,** in an expansion of the valley of the Bosna.

5. **Montenegro,** a natural stronghold in the south of Bosnia, where a Servian people has maintained its independence against the Turks since the fourteenth century. Its territory was enlarged by the Treaty of Berlin, which first gave the little principality (not much more than half the size of Yorkshire), a strip of coast. Capital, **Cetinye.**

6. **Greece,** a kingdom in the south of the peninsula, more than one-fourth of the size of Great Britain, but with a population of only 2,000,000. It achieved its independence of Turkey in 1830, and had its boundaries extended fifty years later, when the fertile wheat-growing valley of Thessaly and other districts in the north were added to it. The mainland is divided into two parts by the **Gulfs of Corinth and Ægina,** between which lies the **Isthmus of Corinth,** through which at its narrowest part (less than four miles) a canal navigable by the largest vessels is now being pierced.[1] A large part of the kingdom consists of islands, the largest of which is the long island of **Eubœa** or **Negroponte,** separated from the mainland only by the narrow channel of Euripus. The islands farther to the south-east are known as the **Cyclades,**[2] those farther north as the **Sporades,**[3] while those on the west of the mainland, together with **Cerigo** in the south, are called the **Ionian Islands** (Zante, Corfu, Corcyra, or Kerkyra, &c.) Except in Thessaly, the most important products of Greece are olives, wine, and a small kind of dried grapes, which take the name of *currants* from the town of Corinth. From the nature of the surface, however, Greece has always been less a country of agriculturists than of seamen and merchants.[4] The capital and the only considerable town in the country is **Athens,** in the province of Attica, north of the Gulf of Ægina. Its citadel, called the Acropolis, is still crowned by some fine ruins, relics of the time when this small but famous city was at the head of civilisation, the home of

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[1] A project originally started by the Roman Emperor Nero in the 1st century A.D.

[2] Gr. *kyklos,* a circle; so-called because they were imagined by the Greeks to form a circle round the sacred island of Delos.

[3] Gr. = the 'scattered' islands; so-called in contradistinction to the Cyclades.

[4] Compare Brittany, Norway, Illyria (pp. 141, 177, 190).

artists, poets, and philosophers, who have been the admiration of all future ages. At the present day it is the seat of a largely-attended university. Its port is the **Piræus**, with which it is now connected by railway. The anciently celebrated cities of *Argos*, at the head of the bay of Argolis, *Corinth*, on the isthmus, and *Sparta*, on the Eurotas, are now all insignificant places; and, besides Athens, the only towns on the mainland of any importance at the present day are **Patras**, on the southern shore of the Gulf of Corinth, with a large export of currants, and **Larissa**, on the Salamvria, in the plain of Thessaly. Of the towns on the islands, the most important is **Hermopolis**, on the island of Syra, a town with an excellent harbour, which, on account of its central situation[1] in the Ægean Sea, has become a much-frequented coaling station for steamers, as well as a busy centre of commerce; on the Ionian Islands, the most important town is **Corfu**, on the side of the island facing the Turkish province of Albania; besides being the centre of a considerable shipping trade, it is the seat of a university.

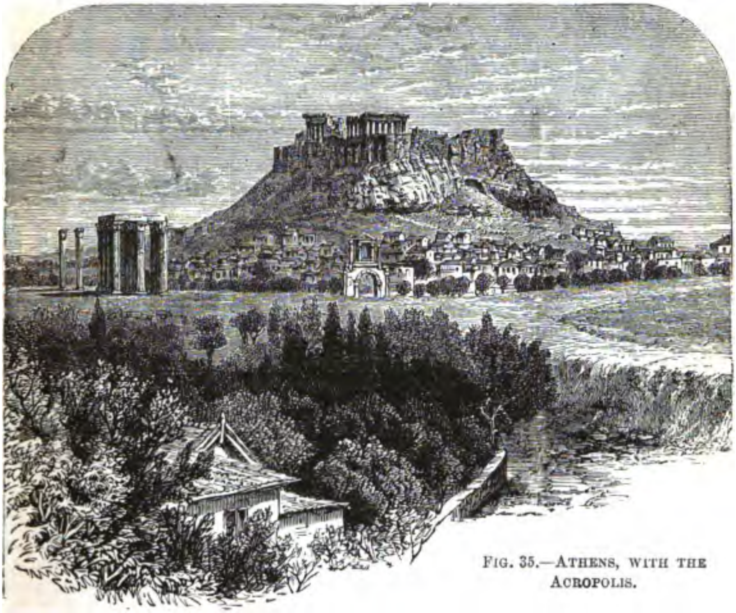

FIG. 35.—ATHENS, WITH THE ACROPOLIS.

COLONIAL AND OTHER POSSESSIONS OF EUROPEAN POWERS.

Denmark.—Greenland and the West Indian islands of St. Thomas, St. John and Santa Cruz.

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[1] See Introd. p. 61 (8).

France.—Immediate Possessions: Algeria; the territory on the Senegal and Gambia, the territory between the Gaboon and the Congo, the islands of Ste. Marie and Nossibé near Madagascar, Mayotte, Comoro Islands, and Réunion or Bourbon; Obock and the neighbouring part of the coast of the Gulf of Aden; Pondicherry, Chandernagor, Carical, Mahé, and Yanaon in India; the Society Islands, including Tahiti, the Marquesas, and some other islands in the Pacific; Saigon or French Cochin-China, Cambodia, and Tongking in Indo-China; New Caledonia, the North American islands of St. Pierre and Miquelon off the Newfoundland coast, the West Indian Islands of Martinique and Guadeloupe, part of St. Martin and some smaller islands; French Guiana or Cayenne. **Protectorates:** Tunis, the island of Madagascar, and the empire of Anam.

Germany.—In West Africa, Togo Land in Upper Guinea, the coast of the Bight of Biafra, the coast from Cape Frio to the Orange River with the exception of Walvisch Bay; in East Africa, the territory of Usagara, &c., behind Zanzibar; in the Pacific Ocean, the north-east of New Guinea, the Bismarck Archipelago (composed chiefly of the islands formerly known as New Britain, New Hanover, and the Admiralty Islands to the north of New Guinea), the Marshall and the Gilbert Islands.

Great Britain.—See page 78.

Italy.—Assab and one or two other points on the African coast of the Red Sea.

Netherlands.—Java, Madura, and other possessions in the Eastern Archipelago; Surinam or Dutch Guiana and the West Indian islands of Curaçao, Bonaire, Aruba, &c.

Portugal.—The African islands of the Azores, Madeira, Cape Verde, St. Thomas, and Prince's Island (Principe), a small part of the coast of Senegambia, Lower Guinea from the Congo to Cape Frio, the East African coast from Delagoa Bay to Cape Delgado; Goa, Salsette, Bardez, Daman, and Diu in India; Macao off the south-east coast of China, and part of the island of Timor in the Eastern Archipelago.

Russia.—Siberia, the Trans-Caspian territory, Russian Central Asia, and the lieutenancy of the Caucasus.

Spain.—Ceuta and several stations known as the Presidios on the coast of Morocco, the Canary Islands off the north-west coast of Africa, the islands of Fernando Po and Annobon off the coast of Guinea, and some smaller possessions on the same coast; the Philippine and Sulu Islands, belonging to the Eastern Archipelago; the Caroline, Ladrone, and Pelew Islands in the Pacific; and the West Indian islands of Cuba and Porto Rico. Spain also claims a protectorate over the west coast of Africa (desert of Sahara) from Cape Bojador to Cape Blanco.

Turkey.—Immediate Possessions.—Asia Minor, Syria, Mesopotamia, and parts of Arabia; Tripoli. **Protectorates:** the tributary principality of Samos in the Ægean Sea, the viceroyalty of Egypt.

The British and Russian possessions outside of Europe are the only ones which contain extensive territories suitable for colonisation by the inhabitants of the mother countries. There are a few French colonists in Algeria.

ASIA.

Approximate latitudes: Cape Chelyuskin, 78° N.; (north of Lake Victoria Nyanza), Cape Romania, 1° N.; (mouth of San Francisco, north of Lake Nyassa) south of island of Timor, 10° S.

Approximate longitudes: west coast of Asia Minor, 27° E.; East Cape, Behring's Strait, 170° W.

ASIA, the largest of the continents, has an area of upwards of seventeen million square miles, or about five times that of Europe, the smallest; while the estimated population, about 800 millions, is only about two and one third times that of Europe. In comparing the **position** of these two continents, it is most instructive to follow the **parallel of 40° N.**, which in the west of Europe has Madrid immediately to the north of it, in the east of Asia has Peking immediately to the south of it. Whereas therefore this line cuts off only relatively small areas in the south of Europe, it divides Asia into two nearly equal parts; and the contrast as regards the distribution of population is much more striking, inasmuch as less than one-twentieth of the population of Europe dwells to the south of that line, which in Asia has a much smaller fraction of the population on the north.

The chief point of correspondence in **outline** between the two continents lies in the fact that in both there are three great peninsulas in the south, Arabia, India, and Indo-China, corresponding to the Iberian Peninsula, Italy, and the Balkan Peninsula. In Asia, however, all is on a larger scale. The Arctic coasts of both continents are similar.

The islands and peninsulas on the east side of Asia enclose several border seas more or less cut off from the main body of the ocean, though none of them to so great a degree as the Baltic and the Mediterranean in Europe. The **Sea of Okhotsk,** between the peninsula of Kamchatka and the mainland, though an inland sea, may be most usefully compared with the part of the Arctic Ocean between Scandinavia and Iceland, since it is cut off from the Pacific by a submarine bank[1] the situation of which is marked by the line of the Kurile Islands. The **Sea of Japan**, between the islands of Japan and the mainland, naturally falls to be compared with the North Sea of Europe (the peninsula of Korea answering to that of Jutland); but this difference must be noted, that the elevation of the sea-bed to the extent of 600 feet, though it would unite the islands to the mainland, would leave a deep inland lake occupying the greater part of the area where the sea now lies.[1] The **Yellow Sea**, farther south, between Korea and China, together with the **Eastern Chinese Sea** at its mouth, would all be converted into dry land by a similar elevation, and so also would the **Gulfs of Tongking** and **Siam** (respectively north-east and south of Indo-China), while the land on the south-east of Indo-China would stretch out so as to enclose all the larger islands near (Borneo, Sumatra, and Java, with Bali).[2] To connect these with the mainland a much slighter elevation of the sea-bed would suffice than in the case of the archipelago of the Ægean Sea. As to the storms of Asiatic seas, see Introduction, p. 41.

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[1] See Introd. p. 24.

As regards **surface**, there are two important points of agreement between Europe and Asia. (1) In both continents the highland regions lie chiefly in the centre, and in the southern peninsulas, while the greater part of the north is a plain. In the case of the southern peninsulas the character of the surface increases the correspondence between Europe and Asia; Arabia being like Spain, a region of arid plateaux, India like Italy, composed of a mountainous region in the peninsula proper, cut off by wide alluvial plains from a continuous barrier of mountains in the north, Indo-China, like the Balkan Peninsula, a mass of irregularly distributed mountains associated with equally mountainous islands.

(2) In both continents the principal mountain chains trend more or less east and west. Only in the north-east do they assume a more northerly trend like that of the Ural Mountains.

There are, however, three important points of difference. (1) The mountain ranges of Asia are not only, as might be expected from the greater size of the continent, of much greater extent than those of Europe, but also of much greater height. The **Himalayas**, in the north of India, are the highest mountains in the world. **Mount Everest**,[3] the highest known peak in the chain, attains a height of 29,000 feet or more than five miles, and besides it there are in the southern or higher of the two chains of which it is composed seventeen peaks of more than 25,000 feet in height, and accordingly, all higher than the highest of the Andes of South America, the next highest range in the world.[1]

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[1] Comp. p. 65.

[2] See p. 315.

[3] Sometimes called *Gaurisankar*, though it is doubtful whether this native name properly belongs to Mount Everest.

(2) The extent and height of the plateaux of Asia are enormously greater than those of Europe. The whole of Central Asia is indeed a series of lofty plateaux varying from 2,000 to 20,000 feet in height, enclosed and partly cut off from one another by mountains, the chief of which take their origin in an elevated region to the north-west of India (about 72° E.) From this centre the **Himalayas** proceed south-eastwards, the **Karakorum** Mountains (by some regarded as a third chain of the Himalayas) for a shorter distance in the same direction; the **Kuen-lun** Mountains proceed east and slightly south; the **Tian-Shan** Mountains more towards the north-east.

(3) While all the great mountain ranges of Europe form water-partings, those of Asia are frequently pierced by river valleys, and hence many of the mountain passes of Asia are not across the heads of valleys but through narrow defiles along river-banks or in their neighbourhood. The southern chain of the Himalayas is broken up by river gorges into a great number of sections, while the two greater rivers, the Indus and Brahmaputra, cut right across the whole system.

The **principal rivers** of Asia are necessarily of much greater length than those of Europe. All except those of the Siberian plains rise in the central plateau and flow east, south-east, or south to the Pacific and Indian Oceans; and these all belonging to the monsoon region[2] are all liable to overflow their banks in summer, while at all seasons of the year they are fed with copious supplies of water from the elevated areas in which they have their head-streams. In the interior, both on the high plateau from which the encircling mountains cut off the supplies of rain,[3] and in the plains of the west, between the Caspian Sea and the mountains, there are numerous rivers which after a longer or shorter course dry up in sandy deserts, their water being partly absorbed by the porous soil, partly evaporated. Such rivers are, however, of the highest importance, since on their banks are found fertile oases, sometimes with large towns for their centre.[4]

The **fresh-water lakes** of Asia are relatively of far less importance than those of Europe. The largest, **Lake Baikal**, on the Siberian slopes of the mountains in the north-east, is nearly twice the size of Lake Ladoga; but there is no lake-studded district in Asia like that of Finland and Scandinavia, or even like that of the Alps in Europe. On the other hand, there are large inland seas of salt or brackish water, besides an immense number of small salt lakes in the low-lying region adjoining Europe south of the Ural Mountains, and other salt lakes elsewhere. The **Caspian Sea**, 170,000 square miles in area (twice the size of Great Britain), is the largest inland sheet of water in the world. The **Sea of Aral** (rather more than twice the size of Lake Baikal) is inferior in size only to the largest lakes of Africa and America, **Lake Balkhash**, about one-seventh larger than Lake Ladoga.[1]

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[1] See section across Asia, p. 63. [2] See pp. 42, 51. [3] See p. 52. [4] See pp. 225, 236, 259.

From its more easterly position, Asia[2] has a **climate** subject to greater extremes of temperature than Europe.

The mean temperature of the year is everywhere lower than in corresponding latitudes in the western Continent, the mean temperature of January, the coldest month, relatively still lower, but the mean temperature of July, the hottest, everywhere higher, notwithstanding that on and near the east coast the sea has a certain effect in moderating extremes. Owing to the great width from east to west of the land-mass to which it belongs, the coldest area in the world lies towards the north-east of this continent, and it is a fortunate thing for that part of Asia which lies to the south that the mountains intervene to shelter it from the cold winds that would otherwise sweep down on it from this area.

The **rainfall** is insufficient, not only, as already intimated, in many parts of the interior, but also in the south-west (as far east as the Indus valley), where the southerly winds of summer blow not over the ocean but over Africa or both Africa and Arabia. On the other hand, in the monsoon region in the south-east, and especially in the tropical portion of it, the rainfall is very abundant.

The region just referred to, including the whole area from India to the north of China, together with the islands of the Eastern Archipelago and Japan, is that which contains the great mass of the Asiatic population. It comprises, according to the best estimates, seven-eighths of the inhabitants, although not very much more than a quarter of the area. In the rest of Asia, the average density of the population is only about eight to the square mile, or about half that of Norway; the principal parts in which a greater density is found are the western skirts of the central tablelands and some districts in Asia Minor.

Most of the **inhabitants** of Asia belong to **two types**, the **Mongolian** and **Caucasian**, the former characterised among other things by yellow complexions without ruddy tinge, small almond-shaped obliquely set eyes and high cheek-bones; the latter by a fair complexion usually with a ruddy tinge, low cheek-bones, and round eyes set straight. Of the Mongolian type (most abundant in the east) the Chinese are the most numerous representatives, as the Hindus are of the Caucasian. Each type is broken up into great groups the languages of which are entirely distinct from each other, while the groups are themselves subdivided into smaller groups speaking allied languages.

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[1] See p. 181.

[2] See Introd. p. 51.

Among the races of the Mongolian type, the most important of the great groups are the Chinese and Anamese, the Finno-Tatars, inhabiting Siberia and Western Asia, and the Malays[1] in the south-east. Of those of the Caucasian type, the chief great linguistic groups are the Aryan (comprising Hindus and Iranians), and the Semitic (of which the Arabs are now the principal representatives). To this type belong also the majority of the inhabitants of the Caucasus (whence the name Caucasian).

As regards **religion**, Asia is remarkable as the cradle of all the great religions of the world—Judaism, Christianity, and Mohammedanism; Zoroastrianism, Brahmanism, Buddhism; and three of these (the first three) arose among Semitic peoples, the others among Aryans. **Brahmanism** or Hinduism, **Buddhism**, and **Mohammedanism** are now the prevailing religions, the first in India, to which it is confined, the second throughout the monsoon area except in India, the land of its birth, and the third in western Asia and partly in India and the Eastern Archipelago.

Of these religions, Judaism, Christianity, and Mohammedanism all agree in declaring the existence of one Supreme Being, and are hence known as monotheistic religions. **Mohammedanism** takes its name from Mohammed, an Arabian who founded this religion early in the seventh century of our era. The most noteworthy effects of Mohammedanism on the life of its professors arise from its recognition of polygamy, its prohibition of the use of wine (a prohibition observed in some Mohammedan countries with great strictness, in others scarcely regarded at all), and its injunction on all its followers to make a pilgrimage to the sacred city of Mecca (see Arabia, p. 234) at least once in their lives. In some Mohammedan countries, those who have made this pilgrimage are distinguished by a peculiar dress. In all the more civilised Mohammedan countries, the *mosques* or temples are a striking feature, and are generally distinguished by the possession of tall slender towers called minarets, from which a crier (muezzin) calls the people to prayer (see cuts, p. 213 and p. 245).

Brahmanism or Hinduism is the ancient religion of the Hindus, and, though possessing sacred books of an exalted character, is in its present degraded form chiefly characterised by the worship of innumerable idols and the observance of caste distinctions, in consequence of which different sections of the people are kept entirely separate from one another, intermarriage being prohibited, and members of one caste not allowed to follow callings peculiar to another. The four original great castes of the Brahmans or priests, the Kshatriyas or warriors, the

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[1] See pp. 250, 277, 317.

Vaisyas or merchants and tillers of the ground, and the Sudras or labourers, have in process of time been subdivided into a great many minor castes, the isolation of which is often as strictly maintained as that between the great castes. Pariahs or those who are members of no caste are treated with contempt by all who can claim to belong to any caste, even the lowest.

Buddhism derives its name from the epithet Buddha, meaning enlightened, applied to the founder of this religion, who lived in the fifth or sixth century B.C. The religion he taught was meant to be a reform of the corrupt form of Brahmanism which then prevailed in India, and was specially directed against idolatry and the observance of caste. He endeavoured to substitute for the Brahmanism of his time a lofty system of morality, in which the virtues of gentleness and kindness to animals were particularly enforced; but at the present day the chief outward signs of the observance of this religion are the numerous (often colossal) statues of Buddha, the *dagobas* or *pagodas* erected to enshrine relics of Buddha (see cut, p. 249), and the monasteries in which the swarms of yellow-robed priests or *bonzes* generally dwell.

Zoroastrianism is the religion of the ancient Persians, and is now almost extinct, having only a few professors in the heart of Persia and in Bombay, and one or two other towns in India. They believe in the existence of a good and an evil deity, and are sometimes called fire-worshippers, because they regard light and fire as symbols of the former. In India they are known as Parsis.

ASIATIC COUNTRIES.

I. *COUNTRIES OUTSIDE OF THE MONSOON REGION.*

1. **SIBERIA** is the Asiatic continuation of the more northerly parts of Russia in Europe, and in the north-west is politically as well as physically separated from Russia in Europe by the Ural Mountains, which in this part of their course form on the Asiatic side a much more marked feature than on the European side. Its area is not far short of five millions of square miles, though its population is still under four millions, no greater than that of London, a result chiefly of its severe climate, but partly also of its remoteness from the chief seats of civilisation.

Plains occupy the greater part of the west, but mountains and hills cover a considerable area in the east, and more especially the south-east (**Yablonoi** and **Stanovoi** ranges). Amidst these mountains, partly on the Chinese frontier, flows the navigable **Amur**. Mountains also occupy the southern frontier as far west as the 80th meridian of east longitude. Among these are the **Altai** and other mountains, the northern spurs of which are rich in

minerals (silver-yielding lead, graphite,[1] coal, &c.) Siberia also yields abundance of **ivory** derived from the tusks of the mammoth or woolly elephant, now extinct.[2] The New Siberian Islands, off the mouth of the Lena, are specially rich in these remains.

The aspect of the vegetation is similar to that of the corresponding parts of Russia in Europe. In the north is a vast area of **toundras**, extending in some parts almost to 60° N. There then follows an area of forests and marshes with fur-bearing animals, an area traversed by magnificent navigable rivers draining into the Arctic Ocean—the **Ob** or Obi and **Yenisei** in the west, the **Lena** in Eastern Siberia. Only in the southern parts of Western Siberia is there land suited for agriculture, and here, among the valleys opening out from the central highlands of Asia, there are some deposits of rich black soil such as is found in Southern Russia.[3] There chiefly lies the hope of the future development of Siberia, when it has been brought into more intimate connection with the commerce of Western Europe. Severe as the winter is (too cold for European fruit-trees), the summers are not only suitable for the growth of wheat, but even warm enough for melons to ripen in every Siberian garden.

The great defect of Siberia at present is the want of communications. There are few roads, and no railways. The navigable rivers are hence invaluable for commerce, and, above all, the rivers of the Ob and the Yenisei basins, which are made use of in the overland trade (in tea, woollen goods, and furs) between Russia and China. Near the right bank of the **Selenga**, in the south-east of Lake Baikal, lie the two adjoining towns where the products of the two empires are exchanged—**Kiakhta**, on the Russian, **Maimachin**, on the Chinese side of the frontier. Thence the products are conveyed by the navigable Selenga to Lake Baikal, and thence chiefly by water to **Tobolsk**, the nearest town on the Irtish, to the southern passes across the Urals.[4]

Important as these highways of commerce are, they are subject to the drawback that they can be used only for part of the year, the rivers being frozen over for a longer or shorter time in winter, in some parts for nearly six months. Hence the breaking-up of the ice at the end of winter is the most important event of the year in Siberia, and the spectacle then produced on the Siberian rivers is on a scale of grandeur corresponding to its importance. The break-up of the ice begins in the south, and so rapidly does it proceed that the lower parts of the rivers, still dammed by ice, are unable to carry off the water, which consequently streams swiftly up the tributaries laden with numberless ice-blocks. Backwards and forwards the water sways for days together, until, under the influence of the south winds, the ice melts away, and the long winter is followed at a bound by the long summer.

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[1] Exported to Nürnberg, in Germany, for the making of lead pencils. See p. 92, *n*.

[2] Entire carcases of this long extinct animal have been found preserved in the frozen ground of northern Siberia.

[3] See p. 182–3.

[4] The sea-route to the mouths of the Siberian rivers which the Swedish navigator Nordenskiöld maintained to be practicable, after his voyage round the north coast of Europe and Asia in 1878–79, has not yet proved commercially successful.

To increase the utility of the river trade-route the railway from Perm to Ekaterinburg (entirely in European Russia) is at present being continued to the point in Siberia at which the river navigation begins, and a canal is being cut to connect the basins of the Ob and Yenisei.

The **inhabitants** of Siberia are partly native, partly colonists from Russia, partly Russian convicts and political offenders, who have been deported thither.

The native inhabitants are chiefly of the Mongolian type and members of the Finno-Tatar family. In the north they are fishers and hunters, and are mostly heathen; in the south, nomadic herdsmen, followers of Mohammed. The colonists lead a settled life, are chiefly engaged in agriculture and mining, and the same occupations are pursued under comparatively little restriction by numbers of the deported population.

The principal tribes in the extreme north are the Samoyedes, Tunguses, Yakuts, Yukaghirs, and Chukchis, occurring in that order from west to east. Farther south in the west are the Ostyaks and Kirghiz.

All the chief **towns** stand on the great rivers and their navigable tributaries. The largest is **Irkutsk**, on the Angara, a tributary of the Yenisei, a little below its issue from Lake Baikal, hence an important station on the trade-route between Russia and China. **Yakutsk**, on the Lena, at the point nearest the Sea of Okhotsk, is an important centre for the fur trade. **Tomsk**, on the Ob, the chief centre of the gold-washers.[1] It is now the seat of a university. **Tobolsk**, see above.

2. RUSSIAN CENTRAL ASIA.—The territory lying to the south of the Ural Mountains, east of the Caspian, west of the Chinese Empire, and north of Persia and Afghanistan, comprises an area of about one-and-a-half million square miles, with a population of less than five millions. This population is chiefly collected in the south-east, where the valleys opening out from the Tian-Shan Mountains, contain the most fertile and best watered soil, and where accordingly there is a settled population pursuing agriculture. Farther to the north and west agriculture can be carried on only in the neighbourhood of rivers, which supply water for irrigation, and the chief towns are the centres of oases seamed with canals, led from the rivers for that purpose.

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[1] That is, of those who obtain gold from earthy matter by washing away the lighter material with which it is mixed. In other places gold is obtained by crushing rocks in which it is embedded. Comp. p. 313, under Victoria.

The principal rivers are the **Ili**, which finally flows through a swampy delta into Lake Balkhash; the **Sir**,[1] which flows into the north, the **Amu**,[1] which flows into the south of the Sea of Aral; the **Zerafshan**, which rises among the southern mountains, but after a westerly course dries up in the sands; and the **Murghab**, which enters this region from Afghanistan in the south, and also dries up. On or near the Sir stand **Khokan** and **TASHKENT**, the latter the principal town in Central Asia; near the Amu, **Khiva**; on the Zerafshan, **Samarkand** and **Bukhara**; on the Murghab, **Merv**.

The greater part of the region consists of steppes, roamed over by nomadic tribes (Kirghiz, &c.), who dwell in felt tents, called yurtas, and rear horses, cattle, and camels. Mohammedanism is the prevailing religion.

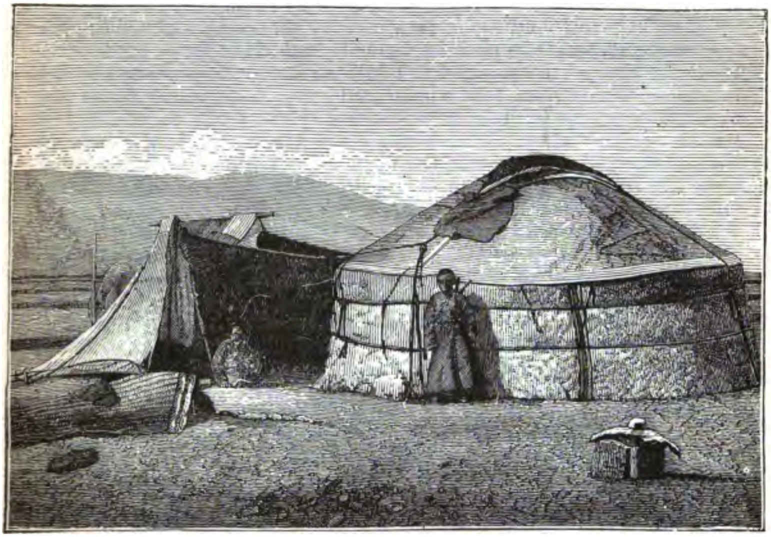

FIG. 36.—A YURTA OR FELT TENT OF CENTRAL ASIA.

Most of this territory is under Russian sway, and even where not directly subject to Russia is under Russian influence. A railway (the Trans-Caspian Railway) has been constructed by the Russians from the Caspian Sea south-eastwards near the line of the Persian frontier, and then across the desert north-eastwards to Merv; and when completed the railway will extend to Samarkand.

3. CAUCASIA AND ARMENIA.—These are mountainous territories lying to the south-east of Russia in Europe, between the Black Sea and the Caspian. Caucasia takes its name from the **Caucasus Mountains**, a range which stretches from west-north-west to east-south-east for a distance of 700 miles, and has several summits above 16,000 feet (**Elbruz**, 18,500 feet). The **principal pass** in the chain lies about the middle, just to the east of Mount Kazbek, and is now crossed by a well-made Russian road leading from Vladikavkas[1] on the north through the **gorge of Dariel** to Tiflis in the south.

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[1] To these names the word *Darya*, meaning 'river,' is often added.

The western half of the chain is the narrower, the eastern half spreading out to a considerable extent on the north, where it consists of an assemblage of lofty plateaux, natural fortresses bounded by huge precipices, which are washed at their base by torrents.

A still greater contrast is presented by the north and south. On the north, steppes occupied by nomads and their herds come close up to the base of the mountains, while on the south, protected by the mountain barrier from cold winds,[2] and hence from winter frosts, the orchards of the lower slopes are succeeded by vineyards, cornfields, and pastures in rich alternation. Steppes are found on this side only in the eastern lowlands, while in the west, where summer rains are drawn from the Black Sea with the regularity of the monsoon area,[3] dense forests advance close up to the water's edge and leave no room for man.

The southern limit of the Caucasus is formed by the valley which bounds the Armenian plateau on the north, and is traversed by two rivers flowing in opposite directions—the **Rion** (ancient Phasis[4]) to the Black Sea, and the **Kur** to the Caspian. A railway, the highest elevation of which is about 2,400 feet, now traverses this valley from end to end—from the unhealthy town of **Poti**, on the Black Sea, to **Baku**, the centre of a district rich in **petroleum**, on the Caspian. The petroleum is used as fuel in working the engines on the Trans-Caspian railway. In the west of the Caucasus, north of the main chain, there is another supply of petroleum, less abundant, but more important in the commerce of the west, since the petroleum is conveyed by a pipe to a small port on the Black Sea.

The **Armenian Plateau** is composed of a series of mountain-traversed table-lands, two of which are so completely isolated as to be occupied by salt lakes[5] (**Van and Urumia**). **Lake Gokcha** is almost completely enclosed by mountains, from which it receives numerous influents on all sides, but it has an outlet to the Aras (tributary Kur), and is therefore fresh. Among these table-lands are the head-waters, not only of the Kur and its tributary the

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[1] The terminus of a line of railway connected with the railway system of Russia in Europe.

[2] See Introd. p. 52, and the pages referred to in the note.

[3] See Introd. pp. 42, 51, and p. 239.

[4] Traversing the country whence the *pheasant* or *Phasian* bird was introduced into Europe.

[5] See Introd. p. 81.

Aras, but also of the Tigris and Euphrates. The table-lands are mostly steppe-like in character, and hence the occupations of the people are mostly pastoral; but agriculture is also largely pursued, and fruit-trees[1] are abundant.

The isolation both of the valleys of Caucasia and the table-lands of Armenia is illustrated in several ways by their **inhabitants** and their **fauna.**[2] The Caucasus is inhabited by a large number of tribes belonging to the type which takes its name from this region, but speaking languages wholly distinct from those of the Aryan stock, and even in some cases from each other. Independent, and lovers of freedom, like all mountain tribes, they have been brought under one rule only through being conquered by Russia in the present century after fifty years of conflict, and one of the chief tribes, the Circassians, rather than submit to the Russian yoke, migrated to Turkey and settled there among fellow-Mohammedans. Among the **animals** of the Caucasus are the European bison, elsewhere extinct except in the forests of Western Russia, the chamois, and a peculiar kind of ibex, one of the highest of mountain-climbers.

The **Armenians**, another people of Caucasian type, are peculiar both in language and religion, the latter being an ancient and independent branch of Christianity. Cattle-rearers and tillers of the ground at home, they emigrate in large numbers, and are among the principal traders of the Levant. The Armenians have never obtained political unity, however, nor have they been able to keep out foreign elements from their isolated table-lands, which are in many places the haunts of nomadic plundering **Kurds.**

At present Armenia is divided among three states, all the three divisions meeting in **Mount Ararat**, an extinct volcano 17,000 feet high. The northern division, with the town of **Erivan** and the fortress of **Kars** in the west, and the Aras region in the east, belongs to Russia; the south-western division, with Lake Van and **Erzerum**, the chief town on the trade-route between Trebizonde and North-western Persia, to Turkey;[3] the south-eastern division, with Lake Urumia and the town of **TABRIZ**, to Persia.

The whole of the Russian territory in this part of Asia forms the **Lieutenancy of the Caucasus**, which is divided into **Cis-Caucasia**, north of the Caucasus Mountains, and **Trans-Caucasia** (including Russian

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[1] The apricot is a native of this region, and was introduced thence into Southern Europe in the fourth century B.C.

[2] A collective name for the animals of a region.

[3] Comp. p. 236.

Armenia), to the south of that chain. The seat of government is **TIFLIS**,[1] occupying the centre of a rich valley and, as already indicated, at the point where the main road through that valley is crossed by the only road across the Caucasus.

4. TURKEY IN ASIA.—The territory under Turkish rule in Asia comprises Asia Minor with part of Armenia (see p. 226), Syria, Mesopotamia, and parts of Arabia (see p. 233).

Asia Minor is a plateau upwards of 3,000 feet in height bordered on the north and south by mountain chains parallel to the sea-coast, but opening on the west by numerous valleys, the submerged portions of which, as in the opposite Balkan Peninsula,[2] now form gulfs lying between rocky promontories and behind a breastwork of islands. The principal continuous mountain range is that on the south, the **Taurus**, which follows the windings of the coast, till in the east it turns inland north-eastwards, and is succeeded by the lower range of the Anti-Taurus. In the portion that trends northwards are the gorges known as the **Cilician Gates**, which afford a passage into Syria for the commerce of the west and north of the table-land.

Towards the south coast flow only a large number of mountain torrents from the Taurus range, the general slope of the plateau (except in the west) being towards the north, where the **Halys**, or **Kizil Irmak**,[3] pierces the mountains before entering the Black Sea by a delta. On the west the principal river is the **Menderes**, ancient *Meander*, which on account of its numerous windings has given a word to the English language. At the broadest part of the peninsula the drainage of the interior is inland, and here a large salt desert has at its lowest part a long and shallow salt lake.

This salt desert is the most arid part of the peninsula, but the rainfall is scanty everywhere within the border mountains. Only in the western valleys, where the rivers afford the means of irrigation, does cultivation ascend far into the interior, and there the products are those of the warmest parts of the Mediterranean peninsulas—not only sweet wine, olives, oranges, and other southern fruits, but also tobacco and cotton, as well as mastic.[4] On the inland steppes sheep are reared, and the district of Angora adjoining the salt steppe on the north is famous for a silky-haired race of goats (whence Angora wool).

[1] See Introd. p. 61 (3) (*b*).

[2] See p. 208.

[3] Turkish = 'Red River.'

[4] A kind of resin.

The inhabitants of the interior are chiefly Turks; on the coasts, where the largest towns have always been situated, are still many Greeks, as there were in ancient times. Of the coast towns now existing the most important is **SMYRNA**, at the head of a deep inlet about the middle of the west coast. It is the last survivor of a number of ancient seaports (*Miletus*, *Ephesus*, and *Phocæa*), most of which have decayed through the silting up of their harbours.[1] A railway now proceeds from Smyrna inland as far as **Alashehr**, from which point now start the camel caravans that cross the interior. **Konieh**, on the south-west of the inland salt steppe, is the meeting-place of the chief caravan routes. **Brussa**, a little to the south of the Sea of Marmora, is celebrated as having been the capital of the Turkish Empire before the Turks gained a footing in Europe. **Scutari**, on the Bosporus, is a suburb of Constantinople.

Of the islands, **Samos**, about the middle of the west coast, is tributary to Turkey, but otherwise independent. **Cyprus**,[2] off the south coast, about half the size of Wales, consists of a rich plain, furnishing wine, cotton, mastic, and other products, stretching between two bays in the east and west and ranges of mountains in the north and south. It is now under British administration, though still nominally a part of the Turkish Empire. Its capital is **Levkosia**, or **Nicosia**, in the plain; its chief port, **Larnaca**, on a bay in the south-east.

Syria and Palestine.—This portion of Asiatic Turkey consists mainly of a limestone plateau, but the southern two-thirds of it is divisible into four longitudinal strips running parallel to the eastern shores of the Mediterranean Sea. In the west there is a plain, extremely narrow in the north (the ancient Phœnicia), broader to the south of Mount Carmel (the fertile plain of Sharon), and still broader farther south, where the coast trends south-westwards towards Egypt, and the interior (the land of the ancient Philistines) becomes first steppe-like[3] and then desert. East of the plain the ground rises rapidly in the north to the chain of the **Lebanon Mountains**, which are followed on the south by an almost continuous plateau. The next strip on the east is a long valley, which in the north, between the ranges of Lebanon and Anti-Lebanon, is above the level of the sea, but rapidly falls below that level in the portion known as the **Ghor**. In this valley rise all the chief rivers. The **Orontes** flows northwards and finally westwards round the northern extremity of a continuation of

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[1] Smyrna owes its continued existence to the fact that the river which enters the inlet on which it stands enters not at the head of the inlet but on the north side, where its deposits have extended the coast-line without blocking up the entrance to the gulf.

[2] Anciently rich in copper, this island derives its name from the Greek word for that metal.

[3] See Introd. p. 58.

Lebanon ; the **Leontes** southwards and then westwards round the southern extremity of the same range ; and the **Jordan**, suddenly emerging from underground as a full-bodied stream,[1] proceeds southwards with a rapid fall through the Ghor, traversing in succession the fresh-water lakes of **Huleh** (Merom) and **Galilee** (the latter nearly 700 feet below sea-level), and ends in the **Dead Sea**, a sea remarkable for the intense saltness of its waters as well as for the fact that it occupies the deepest depression on the land surface of the earth (the surface of the sea 1,300 feet below that of the Mediterranean). South of the Dead Sea the Ghor gradually rises in elevation till the ground again reaches a higher level than that of the Mediterranean.

The fourth longitudinal strip is another plateau which gradually passes eastward into a desert.

From a remote period a land of Semites, first of Jews and then of Arabs (whose language has been the prevailing one since about the eighth century), Syria is a country of peculiar interest to all the civilised nations of the West, as the home of the Judaic religion and the birthplace of Christianity. To the adherents of both these religions **Jerusalem** is a sacred city. It stands at the height of 2,500 feet above the sea on a plateau west of the mouth of the Jordan. Not less sacred to Christians is **Bethlehem**, the birthplace of Christ, three miles to the south. Several of the other important towns are also well known from the sacred writings of the Jews and Christians ; among these, **DAMASCUS**, 'on the banks of Abana and Pharpar lucid streams,' a city occupying a site of rare beauty and fertility, with such geographical surroundings that it has been a place of importance from the very dawn of history. The Abana of Scripture, now the Barada, besides endowing its environs with luxuriant verdure, is the source of its commerce, inasmuch as in breaking through the range of Anti-Lebanon it opens up a pass by which in ancient times the traffic of the West was brought from *Tyre* and *Sidon*,[2] as it is in modern times from **Beirut**. Landwards, caravans proceed north, east, and south, across the desert. **Haleb**, or **Aleppo**,[3] 200 miles farther north, occupies an oasis situated about midway between the Mediterranean and the Euphrates, where that river in its middle course approaches nearest to the sea, and has hence been a trade-centre from time immemorial. In ancient times the seaports on this route were *Antioch*, on the Orontes, and *Seleucia* on the coast ; the modern seaport is **Alexandretta or Iskenderun**,[4] on the gulf of the same name, in the angle between Syria and Asia Minor. Along one of the routes connecting Aleppo with the sea it has frequently been proposed to construct a railway.

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[1] See Introd. p. 29, and comp. p. 110 *n*. 2.

[2] The harbours of Tyre and Sidon have been destroyed by the rise of the land on this part of the Syrian coast.

[3] The latter name, an Italian form, is another survival of the former predominance of Italy in the commerce of the East (see p. 209 *n*. 2). Before the discovery of the seaway to India the Venetians had forty large trading-houses in Aleppo.

[4] Both names, the latter Turkish, derived from Alexander (the Great).

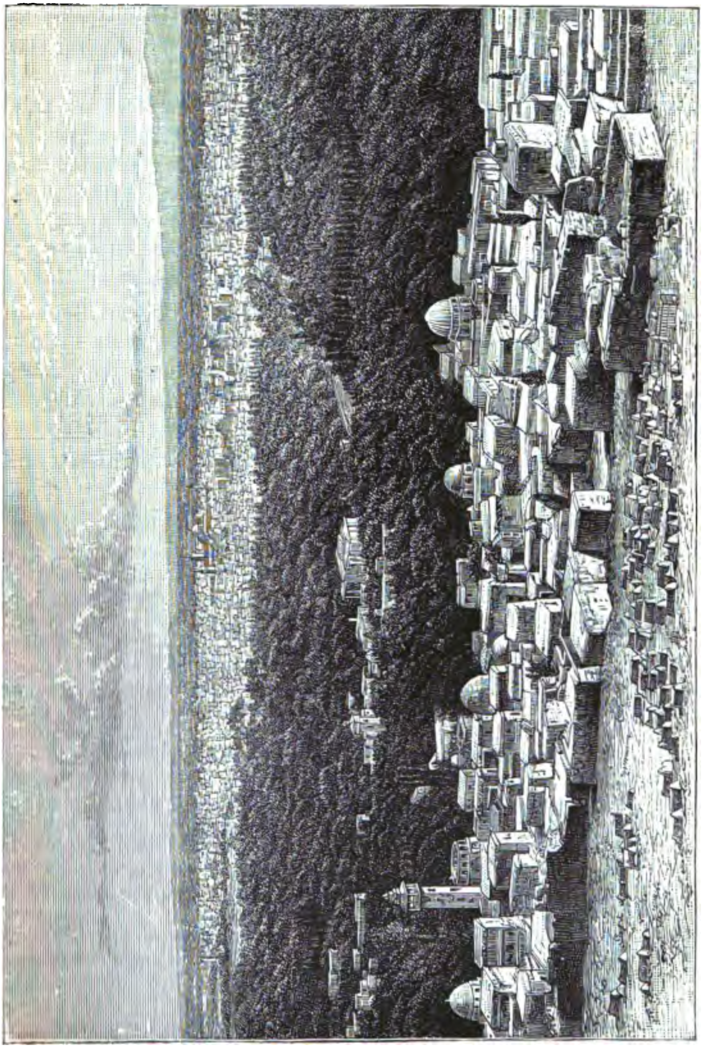

FIG. 37.—DAMASCUS. (By the kind permission of Messrs. Nelson and Sons.)

Mesopotamia.—Both this name, derived from the Greek, meaning 'the middle of the rivers,' and the Arab name **El Jezireh**, meaning 'island,' refer to the two great rivers **Euphrates** and **Tigris**, by which in fact the region is almost islanded. These two rivers, after quitting the Armenian plateau, first diverge but afterwards approach one another to within a distance of about thirty miles, and now ultimately unite to form the **Shat-el-Arab**, before entering the head of the Persian Gulf, into which in ancient times they flowed separately. To these streams the region owes all its fertility. The rains are too scanty for agriculture, but the inundations due to the melting of Armenian snows annually cover the adjoining surface with layers of rich soil, and at the same time supply the necessary moisture, and at an early date taught the dwellers on the banks of the rivers to use their waters more effectually by means of irrigation canals. Hence this region has always been occupied at least by a tolerably dense population, and the density has reached at different times and at different places a very high degree round great towns which arose on or near the banks of one of the rivers and became the centres of powerful states.

On the Tigris, such towns have always stood at points from which roads ascend to convenient passes in the eastern highlands. In such a position, on the left bank of the Tigris, stood in ancient times *Nineveh*, the immense ruins of which were discovered about forty years ago, and opposite the same point afterwards rose **Mosul,** still an important town. Lower down, *Seleucia*, *Ctesiphon*, and **Bagdad**, all arose on sites within no great distance from each other at the end of another pass-road; and the last of these still survives, although greatly declined as compared with what it was when the Arabs were at the height of their power, and this was the capital of their empire.[1] On the Euphrates there is now no town of importance, that river being too much exposed to the attacks of the plundering tribes of the desert; but in ancient times there stood on its banks the large and magnificent city of *Babylon*, at the point where the river begins to be navigable both up and down stream. In the middle part of their course both Euphrates and Tigris are too impetuous for up-stream navigation, and goods are only floated down on rafts supported by inflated sheep-skins. The wood of the rafts is itself an important commodity in this treeless region. On the Shat-el-Arab stands **Basra** or **Bussora**, accessible to sea-going ships, and formerly the chief seaport of this region, but now outvied by the Persian town of Mohammera, at the head of the delta.

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[1] This was the seat of empire of Harun-al-Rashid, the famous contemporary of Charlemagne, so well known from the 'Arabian Nights.'

5. **ARABIA**, the largest peninsula in the world, being upwards of a million square miles in extent, or nearly five times as large as the Iberian Peninsula, which it also exceeds in average elevation (3,500 feet as against about 2,500). One half of the peninsula lies to the south of the tropic of Cancer.

The **mountains** of Arabia are situated along the coasts, and especially along the Red Sea coast in the west and the Gulf of Oman in the south-east. Less elevated are the heights along the south coast facing the Indian Ocean, and along the east facing the Persian Gulf. In the extreme north-west, between the **Gulfs of Suez** and **Akabah**, the northern branches of the Red Sea, the granite **Mount Sinai** rises abruptly[1] to the height of more than 9,000 feet amidst a rocky peninsula.

Nearly the whole of Arabia is scantily supplied with rain, and the coast mountains rob the interior of rain almost entirely.[2] Hence in the north and south the greater part of the interior is an utterly uninhabitable desert. Only in the middle the region known as the **Nejd** or **Negd** is studded with numerous date-crowned oases, the home of the Beduins or nomadic Arabs, who rear with care and affection immense numbers of horses and single-humped camels, both of which are among the finest in the world. Here, too, ostriches and gazelles bear witness to the likeness which this part of Asia presents to Africa (see p. 264).

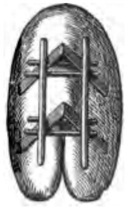

FIG. 38.—THE SADDLE, OR PAD, ON WHICH A CAMEL'S LOAD IS LAID.

The settled population inhabits the coast-strips, and above all the more mountainous tropical portions, which are the best supplied with rain—**Yemen** and part of **Hejaz** in the west, **Oman** in the south-east. Even in these districts, however, the rains are only periodical, and sometimes fail for years together, and hence water has from the remotest period been carefully stored in tanks for irrigation. Among the products of these regions, besides the date and coco-nut[3] palms, durrah[4] and other grains, are numerous aromatic trees and shrubs, balsam, gum, frankincense, as well as the celebrated **coffee** which takes its name from the port of **Mocha**, whence it was at one time chiefly exported.

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[1] See Introd. p. 25.

[2] See Introd. p. 52.

[3] Frequently spelt *cocoa-nut*, but throughout this textbook *coco-nut*, to avoid confusion with the cacao tree from which the so-called cocoa is obtained.

[4] One of the cereals to which the name of millet is given. Like several other so-called millets, and like maize, it has several ears of grain at the end of each stalk. It is the principal cereal grown by the natives in most parts of Africa and in Southern India.

Politically the greater part of the west coast is part of Asiatic Turkey, and so also is the northern half of the strip on the Persian Gulf, but even in these parts the Arabs have an organisation of their own. Small groups of families acknowledge the authority of a **sheikh**, and the subjects of several sheikhs acknowledge the supremacy of an **emir.** The most powerful emir is the Imaum of **Maskat** (Muscat), who rules over Oman. The fortress of **Aden**, with its fine natural harbour and a small district round on the south coast near the **Straits** of Babelmandeb, belongs to Great Britain, which also possesses several small islands on the coast. Sinai and the north-west form part of Egypt.

The most celebrated towns are in the Turkish portion of the peninsula on the west. Here, about the middle, is **Mecca**, the sacred city of the ancient Arabs, and now of all Mohammedans. At the pilgrimage, or *Haj*, which takes place in spring, myriads of pilgrims, attended by immense troops of camels, assemble for worship and trade. To the west is **Jidda**, the port of Mecca; to the north **Medina**, the birthplace of Mohammed,[1] the founder of the Mohammedan religion.

The Arabs, now the most numerous, long the most aggressive of the Semitic races, inhabit the whole peninsula, but their true home is the plateau of Nejd, whence have issued all the continuous streams of Arabs, who, soon after the founding of the Mohammedan religion, spread in conquering armies eastwards to India, and westwards to the Iberian Peninsula, and established in the Middle Ages splendid monarchies both in the East and West, and have since then constantly spread as traders through Eastern and Inner Africa, as well as in Asia as far as the Eastern Archipelago.

6. IRANIA.—This is a general name applied to the table-lands between Mesopotamia and the plains of the Indus, and thus embraces an area of about a million square miles wholly outside of the tropics (nowhere below 25° N.). The population, however, is estimated at only about twelve millions, a consequence partly of the nature of the surface and climate, partly of the state of government.

The table-lands have an average elevation about equal to that of Arabia (about 3,500 feet), and are begirt and traversed by mountain ranges, the passes across which are generally high and inconvenient. In the western half the mountains generally trend south-eastwards (in a direction corresponding to that of the Caucasus), while in the east they have an east and west trend on the north and south, a northerly trend on the eastern borders (**Sulaiman Mountains**), and a north-easterly trend on the north-east. There the lofty range of the **Hindu Kush** (higher than the Alps) separates some of the most elevated and secluded valleys in the world; those on the south-east draining to the Indus, those on the north-west, including the **Pamir Plateau**, to the desert region of Inner Asia. In the west the loftiest mountain range is that of the **Elbruz**, parallel to the south shore of the Caspian Sea, and at no great distance from it.

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[1] Born A.D. 571. The Mohammedans reckon time from the date of the flight of Mohammed from Mecca to Medina on the occasion of a rising against him in the former city. The date of the flight or *Hejra* (Hegira) was July 6, 622, which is hence the beginning of the Mohammedan era.

Cultivation everywhere demands irrigation, and is thus confined to the borders of the rivers and the bases of the mountains,[1] into the heart of which canals (**karezes**) are often pierced till water-bearing beds are reached. Wheat, rice, cotton, tobacco, and opium are grown. Fruit-trees are abundant (the peach a native of Western Irania). The date-palm[2] flourishes in the south-west and south, but is banished from the interior by the winter cold due to exposure to the north-east winds. Nomads inhabit the districts incapable of cultivation, rearing horses and camels, the two-humped camel now replacing the single-humped camel of Arabia.

The western half of Irania is under the despotic and crushing sway of the Shah of **Persia**, the eastern half divided between **Afghanistan** in the north and **Baluchistan** in the south. Of the former the emir of the Afghans is the nominal ruler throughout, but many of the tribes, and particularly those belonging to the lofty valleys on both sides of the Hindu Kush, are virtually independent. In the thinly inhabited steppes and deserts of Baluchistan there is hardly a pretence of common rule.

The **inhabitants** of Irania are mainly of Aryan race and language, and indeed the table-lands of this region seem to have been the centre from which that now widely extended stock dispersed. The **religion** is almost everywhere Mohammedan; but the Mohammedans of Persia and some of the tribes to the east belong to a sect regarded as heterodox by the rest of the Mohammedan world, the sect of the **Shiites**, who reject the Sunna or body of traditions supplementary to the Koran, held sacred by the other Mohammedans, who are hence called Sunnites.

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[1] See Introd. p. 52.

[2] See p. 264.

In the desert (chiefly round Yezd) are a few adherents of Zoroastrianism.

The **capital** of Persia is **TEHERAN** (200), at the southern base of the Elbruz Mountains. Even more populous is **TABRIZ** (300), in the north-west, on the Armenian plateau, the centre of the northern trade with Europe, a trade which, since the construction of the Transcaucasian railway, has been almost entirely in the hands of the Russians. At the sacred city of **Meshed** (a Shiite Mecca), in the north-east, the products of Europe are passed on to Afghanistan and Central Asia. Among the south-western mountains of Persia is **Ispahan**, the former capital, one of the residences of the caliphs[1] in the glorious days of the Arabs; and still farther south, in the original country of the ancient Persians, not far from the ruins of Persepolis, is the lovely town of **Shiraz**, celebrated for its rose-gardens, vineyards, and nightingales.[2] In the part of Persia to which these towns belong the trade is mainly in the hands of the nations of Western Europe (chiefly the English), and enters the country by the ports of **Bushire** and **Mohammera**, the former on the Persian Gulf, the latter at the head of the delta of the Shat-el-Arab.

Afghanistan and its principal towns derive their importance chiefly from the fact that they command the north-western passes leading into India. Of these the most important lie north and south of the Sulaiman Mountains; in the north the **Khaibar Pass**, on the route which mostly follows the Kabul river, commanded by the city of **Kabul**, and the **Kurrum Pass**, a little to the south; in the south the **Bolan** and **Nari** Passes, leading from Kandahar. The only railway as yet existing in any part of Irania is one constructed for defensive purposes by the Government of India across a desert which lies in the route of the latter passes. The capital of Afghanistan is **Herat**, on the issueless **Hari Rud**,[3] which fertilises a long valley running east and west, and forming the natural approach to Kabul. In Baluchistan, **Kelat**.

II. THE MONSOON COUNTRIES AND THEIR DEPENDENCIES.

1. **INDIA.**—This vast country, which is now entirely under British influence, occupies, if we include all the Himalayan States but exclude British Burma, an area of nearly one and a half million square miles, or more than sixteen times the size of Great Britain. Its population at the last census (1881) was upwards of 250 millions, two-fifths of whom were congregated in

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[1] See p. 212.

[2] Also celebrated at one time as the centre of Persian culture. Two of the most celebrated of Persian poets, Hafiz and Sâdi, were both natives of this town.

[3] Rud, Persian = river.

the valley of the Ganges in Bengal and the North-West Provinces, which comprise together only one-sixth of the area.

In shape the country is quadrangular, the mainland portion being bounded by two sides which slope north-eastwards and north-westwards to the north of Kashmir, where they meet in about latitude 36° N., and the peninsular portion by two sides which taper to a point in Cape Comorin, in about latitude 8°, N. India thus extends through twenty-eight degrees of latitude, entirely to the south of the most southerly latitude of Europe, and for fifteen and a half degrees within the torrid zone.

By its natural boundaries India is **more completely isolated than Italy**, the corresponding peninsula of Europe. On the north the Himalayas form a complete protection against foreign aggression, and the few lofty passes merely serve as a means of carrying on a scanty trade with the thinly populated regions beyond. On the north-east a succession of mountain ranges and gorges render it equally safe against attack in that quarter, and even prevent the existence of trade with the populous provinces of China, which lie immediately beyond. It is only on the north-western frontier accordingly that India has ever been open to invasion by land-routes, and even there the routes by which invading armies can enter are few and easy of defence. In the southern part of that frontier mountains and deserts render the peninsula almost unapproachable, and consequently the passes by which foreign armies have always found access to the plains of India lie more to the north. The Khaibar Pass is that which has been most frequently chosen.

Surface.—Within the frontier mountains lie **two extensive plains**, following the same general direction as the mountains, and watered by two great rivers with their tributaries, the basins of which form in several respects striking contrasts. The north-western plain is that of the **Indus**, a river which rises on the table-land of Tibet, and bursts through the whole Himalayan system, before it emerges on the arid expanse traversed by the greater part of its course, a river extremely difficult to navigate on account of its shifting shoals, and very destructive on account of the numerous changes of its bed. The north-east plain is that of the **Ganges**, a river which, like most of its tributaries, breaks through only the southern or loftier chain of the Himalayas, and which becomes a navigable stream as soon as it enters on the plain, this plain being one of the best watered, most fertile, and most densely populated in the world. Ultimately the Ganges unites with the **Brahmaputra** to form a delta as large as Ireland, on the outer margin of which new land is being formed with almost unparalleled rapidity.

South of the plains extends a table-land varying from 2,000 to upwards of 3,000 feet in height, occupying the greater part of the peninsula proper. Its northern boundary roughly corresponds in direction with the frontier mountains of India, but on the north-west the table-land is broken in upon by a tract of lowlands stretching across the neck of the minor peninsula of Gujerat, and connecting the lower valley of the Narbada with the plains of the Indus. The south-west and south-east boundaries of the plateau are much better defined. The south-west edge of the plateau, seen from the narrow strip of flat coast to which it descends with remarkable abruptness, appears like a mountain range, and is known as the **Western Ghats**,[1] from the passes by which it is ascended. About the southern extremity of the Ghats rises the lofty group of mountains called the **Nilgiri Hills**, which terminate the plateau, for immediately to the south occurs a remarkable depression called the **Palghat Gap** (about twenty-five miles wide and under 1,000 feet in height), which affords an easy route for the railway from Kalikut to Trichinopoli and Madras, and separates the table-land from the **Cardamom Mountains**, which stretch southwards to Cape Comorin.

On the south-east the table-land is bordered by the **Eastern Ghats**, which are lower than the Western, and leave at most places wider tracts of lowland between the elevated interior and the coast. On both sides the **coast** is generally surf-beaten and difficult of access.

The principal **rivers** by which the table-land is traversed are the **Narbada** and **Tápti**, which flow into the Gulf of Cambay in the north-west, and the **Mahánadi, Godávari**, and **Krishna**, which enter the Bay of Bengal. They are all more or less impeded in their navigation by rocky rapids, but the Narbada, Mahánadi, and Godávari are navigable in the lower part of their course.

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[1] Ghat is an Indian word for 'a stair,' especially a broad stair leading down to a river such as is common in India; hence 'a mountain-pass.'

A large part of the table-land is covered with a rich **black soil** as important to Southern India as the black soil of Europe is to Southern Russia. It is said to have produced crops for a thousand years without manure, and is often called cotton soil from its being so well adapted for the growth of cotton.

Extending over so vast an area, and embracing tracts so diverse in elevation, India necessarily has a very varied **climate**, but everywhere the climate is greatly affected by the **monsoons**.[1] It is upon these that the rainfall depends, but yet the rains occur in different parts of the country at different times.

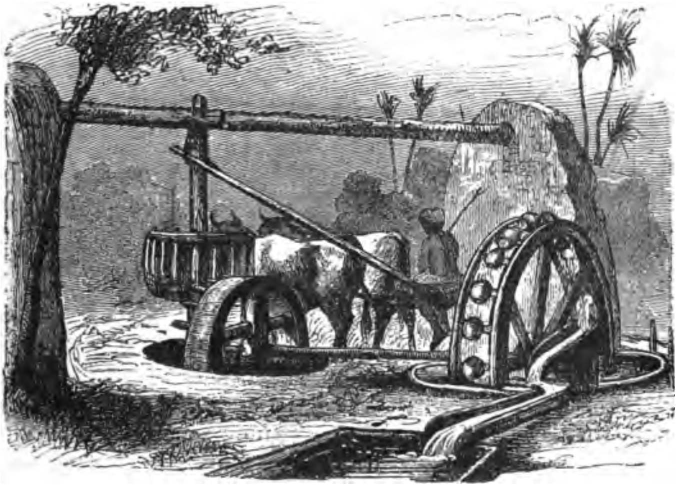

FIG. 39.—A PERSIAN WATER-WHEEL AS USED IN INDIA FOR IRRIGATION.
Similar water-wheels are in use throughout the Mediterranean region.

The parts which invariably receive abundant rains from the south-west monsoon are the south-western edge of the southern plateau, the hills to the north-east of the Bay of Bengal, and the valley of the Ganges, up which this monsoon is diverted as a south-east wind. Hence in these parts the rainy season is the summer, and above all the third quarter of the year; and in good seasons rain falls during the same period over three-fourths of India. The land monsoon brings rain to different districts at two different periods—to the eastern half of the peninsula as a north-east wind in the first quarter of the year. A small area in the south, where the Palghat Gap affords access to the south-west monsoon, receives rain both from it and from the north-east monsoon.

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[1] See Introd. pp. 42, 51.

The variations in the extent and abundance of the rains are the chief cause of the **famines** from which different portions of India suffer from time to time. Throughout a large part of the country it is uncertain whether the rainfall of the year will be sufficient to produce a crop at all, and hence the necessity for **irrigation.** About one-tenth of the cultivated area in India is supplied with water by this means; in the north canals being led from the rivers, while in the south there are numerous tanks or reservoirs in which water is stored.

With regard to its chief **agricultural products,** India may be divided into three regions: (**1**) the colder and drier parts of the north, form the **wheat region** (North-West Provinces and Punjab); (**2**) the moist warm plains from Bengal to Krishna form the **rice country**; (**3**) the drier parts of tropical India, including all the black soil area, form the **region of millets.**[1] Wheat, however, extends also into this region, and the finest kind is grown on the black soil of the valley of the Narbada. In general the **growth of wheat in India for export** is becoming every year of more importance, and since the beginning of the present decade India has come next after the United States in the amount of wheat it supplies to this country. Besides these principal food-grains the agriculture of India produces **cotton** (in Southern India above all on the black soil), **jute**[2] in Bengal, **opium** and **indigo** in the same province, **tea** at various places along the slopes of the Himalayas (particularly Assam and Darjiling), coffee (in the hill districts of Southern India), sugar-cane, tobacco, numerous spices and other less important products.

Forests are found chiefly on the mountain slopes. A broad strip of forest known as the **Tarai** stretches, however, along the base of the Himalayas, forming with its underwood a dense jungle, the haunt of wild beasts and a source of poisonous exhalations; and a still more deadly jungle occupies the marshy tract called the Sandarbans, at the mouth of the delta of the Ganges. Altogether the forests in the British provinces are estimated to cover one-twelfth of the total area. Most of these are now under the management of the Government.

The **principal timber trees** belonging to them are **teak** and

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[1] Both the durrah of Arabia and Africa, here called *joári*, and another cereal called in India *bajra*.

[2] See p. 124 *n*. 4.

sal, both remarkable for the hardness of their wood, that of the teak tree being highly valued as material for ship-building. Among the other trees of India may be mentioned the **mulberry**, on which large numbers of silkworms are reared, particularly in Bengal and the Punjab; the **coco-nut palm**, which fringes and adorns the coasts of the peninsula; and the **date-palm**, which is grown on irrigated land in the valley of the Indus as high as Pesháwar and Amritsar.

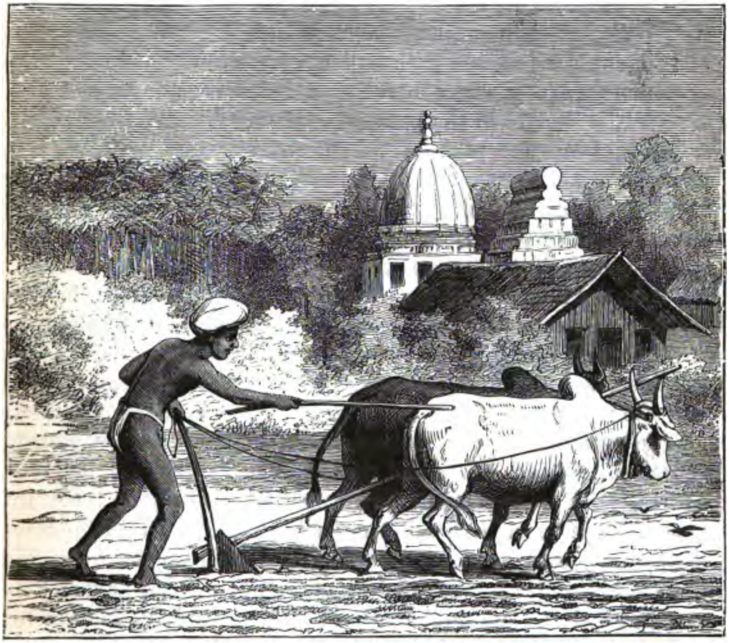

FIG. 40.—PLOUGHING WITH ZEBUS, OR HUMPED OXEN, A BREED VERY ABUNDANT IN INDIA.

Among the more noteworthy **animals** of India are the tiger and other beasts of prey, the elephant, and numerous serpents and monkeys. Under British rule a great deal has been done towards extirpating beasts of prey and venomous serpents, but even yet thousands of people in India are killed every year by wild animals, chiefly snakes. Monkeys often commit great ravages in the cultivated fields, and some of these are preserved from destruction through being held sacred. Elephants are of great value as beasts of burden.

The **mineral wealth** of India is far from abundant. There are many **coal-fields**, but the coal is generally of poor quality, and the only district in which many mines have been opened is round Raniganj, 120 miles north-west of Calcutta, where coal was worked more than a hundred years ago.

The **roads** of the country till the middle of the present century were little better than mere tracks, fit only for rude ox-waggons, and human carriers and pack-bullocks were the principal agents of commerce except where there are navigable rivers. So favoured, however, is Bengal in the possession of this means of communication that in some parts of the province almost every cottage has a navigable stream at its door, and the Bengalese farmer keeps his boat as regularly as the English farmer his gig. All the principal towns in India are now, however, connected by roads, and in addition 12,000 miles of railway have been constructed.

With the increase in the means of internal communication the foreign **commerce** of the country has advanced with enormous strides under British rule. Since 1840 the value of the imports has increased ninefold and that of the exports sevenfold, and now the value per head is much greater than that of any other Asiatic country. The **chief articles of export** are **raw cotton, grain** (particularly wheat and rice), **opium**, indigo, jute, and **tea**; while among the **imports** by far the most important item is **cotton-goods.** The external commerce is chiefly with the United Kingdom, the cotton fabrics of which have now almost entirely superseded the hand-woven goods of the natives, and with these have nearly extinguished the production of the delicate muslin fabrics for which some parts of India have long been noted (Dacca muslin).

Native manufactures now survive chiefly in the Punjab, but cotton factories on a European model have been introduced in the territory under the Governor of Bombay, and jute factories in Bengal.

The **people** of India may be roughly divided into two great sections, those of the northern plains, and those of the hills and the peninsula. The former are mainly an **Aryan race**, speaking a variety of languages allied to the **Sanskrit**, and cannot be regarded as the oldest inhabitants of the country. They immigrated by the north-western passes many centuries before the beginning of the Christian era, and seem to have driven the earlier inhabitants to the hills. The latter are now chiefly represented by the **Dravida peoples** of the peninsula proper, a race darker in colour and not as well formed as that of the plains, and speaking languages wholly distinct (**Tamil** and **Telugu**).

As regards **religion**, about three-fourths of the people are adherents of **Hinduism**. Next to Hinduism, **Mohammedanism** is the religion most largely professed, its adherents numbering about one-fifth of the entire population. The number of Christians does not yet reach two millions.

The Mohammedanism of India is a result of several successive conquests by Mohammedan powers both in the north and south. The last of these conquests which left important permanent results was that of Baber, who invaded India in 1525 and founded the Mogul Empire, which continued to exist at least in name till 1857. Shortly before the invasion of Baber, the Portuguese had acquired a footing in the peninsula, and for about a hundred years this people retained in their own hands almost all the trade of the East. They were followed by Dutch, English, Danes, and French, but about the middle of last century the English influence (represented by the East India Company), through victories over the French and natives, became paramount, and now England rules directly over considerably more than half of the entire country.

Since 1858 the **government** of British India has been vested in the Crown, which appoints a viceroy or governor-general for the whole country, and a council of fifteen members who assist in legislation. The revenue is mainly derived from a land-tax, the sale of opium (which is a Government monopoly and an important export to China), and a tax on salt.

The principal **native states** are Haidarabad, Mysore, Baroda, and the states of the Rajputána and Central India Agencies.

There are in addition three native states in the Himalayas, Kashmir, Nepal, and Bhutan, which are entirely independent, except that in Kashmir the ruler is bound to consult the British authorities in case of disputes.

The provinces of British India are placed under the administration of officials bearing various titles. The native states are subject to their own rulers, who are, however, bound to allegiance to the British authorities, and have a British official stationed at their court.

The provinces are the following :—

	Area in thousands of square miles[1]	Population in thousands (1881)	Density per square mile
Under the Governor-General:			
Ajmír and Mhairwára	2·7	460	170
Berar	17·7	2,670	150
Coorg	1·5	178	112
Andaman and Nicobar Islands[2]	·8	15	—
Under Governors:			
Presidency[3] of Madras	140·0	30,870	220
Presidency of Bombay (including Sind and Aden)	124·2	16,490	133
Under Lieutenant-Governors:			
Bengal	150	66,690	443
North-West Provinces and Oudh	106	44,110	415
Punjab	106	18,850	177
Under Chief Commissioners:			
Assam	46	4,880	105
British Burma	87	3,740	43
Central Provinces	84	9,840	116

The total population of British India, including British Burma, about 200,000,000, of the native states about 55,000,000. The average density of the population throughout the country is under 200 to the square mile, but many parts are greatly over-peopled, and are inhabited by swarms of human beings living in a state of the most abject poverty. Nevertheless the people of India, unlike the Chinese, exhibit great unwillingness to emigrate. A small number leave the country every year to work as **coolies** on sugar and other plantations in tropical colonies, or colonies near the tropics. About half a million Indian coolies are now estimated to be living in various colonies, chiefly British.

Provinces and Towns.—1. Bengal, the province of the Lower Ganges, but including also the delta of the Mahanadi (Orissa).

CALCUTTA (450 ; 800), the seat of the supreme government, on the Húgli, a branch of the Ganges, liable like all the others to be choked by silt, which has led to the decay of several predecessors of Calcutta ; but the Húgli is now kept open by engineering works for ships of the largest tonnage. The North or Black Town is occupied by natives, the South by Europeans. **PATNA**, higher up on the main stream of the Ganges, centre of the opium trade, and the scene of great Mohammedan festivals. **Gaya**, farther south, memorable as the birthplace of Gautama or Buddha, founder of the Buddhist religion.

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[1] For the sake of comparison it may be mentioned that Great Britain has in round numbers an area of 90,000 square miles, the county of Durham about 1,000 square miles.

[2] These two groups of islands in the Bay of Bengal have each a convict station on one of their islands, and the population here given is chiefly composed of convicts, and does not include aborigines.

[3] India was formerly divided under three governors called presidents, but the former presidency of Bengal has now been divided up among various officials.

2. **North-West Provinces, including Oudh**, the latter one of the most fertile districts in the world, with a dense but now stationary population. **LUCKNOW** (260), formerly the capital of the kingdom of Oudh, between the Ganges and its tributary, the Gaghra. On the Ganges itself **BENARES** (200), the sacred city of the Hindus, and seat of a Sanskrit college. **ALLAHABAD**, at the junction of the Ganges and the Jumna, and now at that of the railways to Calcutta and Bombay, hence a great and rapidly rising centre of trade; also seat of a university, founded by the British. **CAWNPORE**, memorable as the scene of a massacre of the English by revolted sepoys in 1857. On the Jumna, **AGRA**, once the residence of the Great Mogul,[1] celebrated for its great mausoleum, called the Taj Mahal. South of Agra, in the native state of Indor, or the Holkar's Dominion, is the town of **Gwalior**, with a magnificent fortress which was kept in the hands of the British from 1858 to 1885.

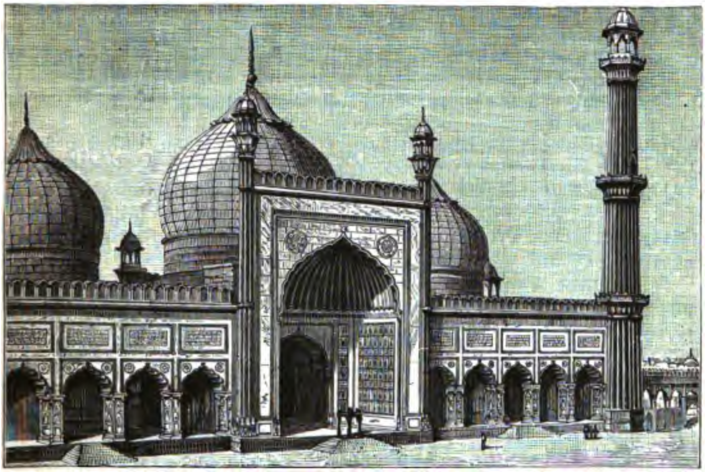

FIG. 41.—THE JAMA MASJID, THE PRINCIPAL MOSQUE AT DELHI.

3. **Punjab**, ‘the land of the five rivers,’ so called from the five rivers which here unite to contribute their waters to the Indus, a land divided by these streams into **duabs**, or districts lying between two rivers. Among the inhabitants are numerous **Sikhs**, a fanatical and warlike religious sect. On the Jumna, **DELHI**, also one of the former seats of the Great Mogul, situated at the edge of the more or less desert country intervening between the Jumna and the passes of the north-west. In the richest of the duabs, between the Ravi and the Bias, is **Lahore**, from the earliest period a meeting-place of trade routes, and

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[1] The name given to the ruler of the Mogul Empire.

now a great railway centre. To the east, **AMRITSAR**, with manufactures of Cashmere shawls, &c. In the extreme north-west, **Pesháwar**, important as a defensive station from the fact of its lying opposite the mouth of the Khaibar Pass. In the north-east, among the Himalayas, **Simla**, at the height of upwards of 7,000 feet above sea-level, an important sanitary hill-station, and residence of the Government of India during the hot season.

4. **Rajputána**, the collective name for a number of native states, chiefly occupying desert plains in the lower valley of the Indus, but containing two large and fine towns, **JAIPUR** and **JODPUR**, in fertile tracts watered by streams descending from the Aravalli Hills.

5. **Bombay and Sind.**—**Karáchi**,[1] in Sind, at the extremity of the north-west coast of India, a seaport rapidly rising in importance on account of its export of Punjab wheat. Between Sind and the rest of the Bombay presidency lies the district of **Cutch**, with the **Run of Cutch** (a sandy waste, encrusted here and there with salt, and flooded during the wet season), and the peninsula of **Gujerat**, at the root of which is situated the important town of **AHMEDABAD**. **SURAT**, at the mouth of the Tapti, has a considerable trade in cotton. **BOMBAY** (775), capital of the presidency, on a small island connected by an artificial causeway with the mainland, has the largest and safest harbour in India, and is the rival of Calcutta as a seaport (acquired by the English from the Portuguese in 1661). On the neighbouring islands of Salsette and Elefante are fine remains of cave-temples. Among the inhabitants of Bombay are 50,000 Parsis (see p. 222), who occupy a very influential position in trade. On the table-land behind Bombay, on the railway to Madras, **PUNA**.

6. **Central Provinces and Berar**, occupying the north of the table-land; comparatively thinly populated, except in the valley of the Narbada. **NAGPUR**, the most important town in the Central Provinces, once one of the chief towns of the Mahratta kingdom, which, in the seventeenth and eighteenth centuries, embraced a large part of the table-land of Southern India.

7. **Haidarabad**, or the Dominion of the Nizam, the most extensive native state in the table-land, with a fertile soil producing cotton, wheat, and oil-seeds. **HAIDARABAD** (350) near the centre of the dominion is the capital, and six miles to the west is **Golconda**, with the famous tombs of the kings—namely, those who reigned over this territory in the sixteenth and seventeenth centuries; once noted also for its diamond beds (now exhausted).

8. **Mysore**, a large native state farther south, producing grain, sugar, and coffee. Chief towns, **Mysore** and **BANGALORE**.

9. **Madras Presidency.**—On the west or Malabar coast, **Calicut**, at one time the most important place on the entire west coast of the peninsula. On the east or Coromandel coast, **MADRAS** (400), the third largest town in India, and the third seaport in rank, notwithstanding the fact that it is situated on a surf-beaten shore, difficult of access. It is now provided with an artificial harbour formed by two long piers built out to sea.

To this presidency belong the **Laccadive** (coral[2]) Islands, off the west coast.

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[1] Often spelled *Kurrachee*.

[2] See Introd. p. 33 *n*.

10. **British Burma.** See Indo-China.

11. **Kashmir** is a mountainous state in the extreme north-west, having in the centre a small high-lying valley, with a fine equable climate, producing corn, wine, and silk, besides roses and other flowers innumerable. The capital is **Srinagar**, on the Jhelum, which issues from this valley to join the Indus.

NEPAL, the native country of the warlike Gurkas, has for its capital **Katmandu**, important as the key of the chief passes across the Himalayas.

BHUTAN, further east, now confined to the most mountainous parts of its former area, the duars, or hill country, further south, having been ceded to Britain, in return for which a small subsidy is paid to the ruler of the state.

2. **CEYLON**, an island about half the size of England, lying to the south-east of India, from which it is separated by a strait so shallow as to have only two or three channels navigable for small vessels. It consists of a belt of low country surrounding a core of mountains.

Coffee is the chief product. **Pearls** are obtained in the Gulf of Manaar. The native inhabitants are mainly a gentle race of Buddhists; but Hindu immigrants, speaking Tamil, are numerous in the north. The island is a British crown colony. The **Maldive** (coral) **Islands**, lying to the south-west, are tributary. Capital of the colony, **Colombo**, on the west coast.

3. **INDO-CHINA** is the name now generally given to the peninsula between India and China, or between the Bay of Bengal and the Chinese Sea.[1] It lies almost entirely within the torrid zone. Its area is about 800,000 square miles, and its population, estimated at about 36,000,000, has a density of only about forty-five to the square mile, much smaller accordingly than either of the other great monsoon countries in the east and west—a consequence of the highly mountainous surface, and the density of the tropical forests.

The **mountains** generally trend north and south parallel to the chief rivers, which they confine in many places to narrow gorges, receding at other parts to form wide and fertile valleys. The chief seats of population are the vast **rice-fields** of the river deltas, all of which are liable to be flooded during the summer rains, on which account the houses are frequently built on stakes to raise them above the flood-level, sometimes on rafts moored on the rivers themselves.

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[1] Also known as the *Eastern Peninsula* and *Further India.*

The **principal rivers** are (1 and 2), in the west the **Irawadi** and the **Salwin**, the former with **RANGOON** on its wide delta, the latter with **Maulmain**[1] at its mouth; (3) the **Menam**, with **BANGKOK** (500) at its mouth, flowing into the Gulf of Siam; (4) the **Mekong**, flowing into the Chinese Sea, and forming a large delta, on which stands the town of **Saigon**; and (5) the **Song-koi**,[2] or Red River, flowing south-eastwards into the Gulf of Tongking, with **Hanoi** or Kesho near the head of its delta. **Numerous rapids impede the navigation** of the rivers, and only the Irawadi is capable of being ascended by steamers for any great distance. On that river British steamers ascend to **Bhamo**, close to the Chinese frontier.

The **inhabitants of** the peninsula are mainly of Mongolic race, and speak languages allied to the Chinese. In religion they are **Buddhists**, and Buddhist pagodas are among the most conspicuous ornaments of the towns. On the **Malay Peninsula**, which stretches like a finger southwards almost to the equator, the inhabitants are Mohammedan Malays, but on all the coasts, and especially in the east and south, Chinese immigrants and settlers form the hardest-working section of the population.

Politically the peninsula is divided among various powers. A strip on the north-west, extending from Bengal to the root of the Malay Peninsula (latitude 10°), till recently known as **British Burma**, is under the government of India. It has an area about equal to that of Great Britain, and is divided into the provinces of **Aracan**, **Pegu**, and **Tenasserim**. It is specially valuable for its **rice** and **teak**.

The population of these provinces, being small relatively to their resources, has been growing under British rule with extraordinary rapidity. Between the censuses of 1871 and 1881 it increased by thirty-seven per cent., the density from thirty-two to forty-three to the square mile. British Burma is the only part of Indo-China in which **railways** have yet been introduced, two starting from Rangoon, one for Prome, on the Irawadi, the other proceeding northwards by Pegu. Proposals are now being made for the construction of a railway from the Gulf of Siam to the Chinese frontier, with the view of extending commerce with the rich provinces of south-western China.

On January 1, 1886, the former kingdom of Burma, with **MANDALAY**, on the Irawadi, for its capital, was added to the British dominions, so that Britain has now the command of the whole course of the Irawadi as far as Bhamo.

On the east side of the straits of Malacca a considerable portion of the **Malay Peninsula** is in British possession or under British protection (chief town **Malacca**); and on a small island at the extremity of the peninsula is the British seaport of **SINGAPORE,** lying in the route from India to Australia, as well as Eastern Asia, and hence the most important seat of marine commerce in Indo-China, although in the early part of the present century it contained only a handful of people.[1] The inhabitants are chiefly Chinese.

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[1] Also spelled *Moulmein*.

[2] Also called the *Song-ka*.

The lower and middle parts of the basin of the Menam, and the middle part of the basin of the Mekong, form together the **Kingdom of Siam.** The lower part of the basin of the Mekong above the delta is the former kingdom of **Cambodia,** which, after existing for some time as a feeble state under French protection, has now been taken under direct French rule. At one time it was the seat of a highly developed civilisation, of which there are some magnificent remains, the most remarkable being the temple known as Angkor Wat. The delta itself, forming **French Cochin China,** is under French rule, and France also possesses the delta of the Song-koi (**Tongking**), and claims a protectorate over the **Empire of Anam,** in the east of Indo-China (capital **Hue,** on the coast). In the interior are numerous independent tribes, the chief of which are those of the **Shan States.**

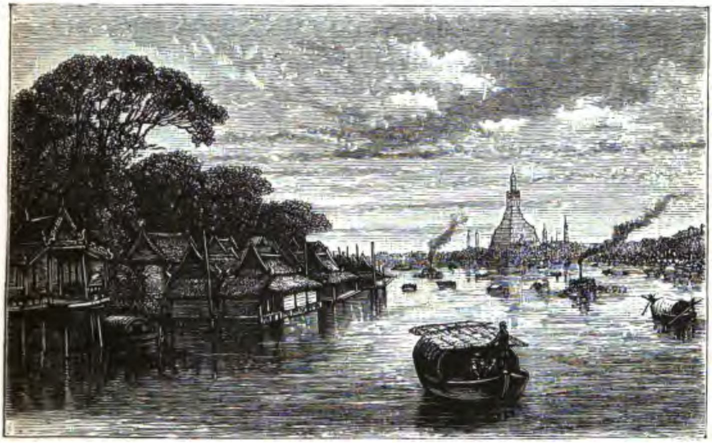

FIG. 42.—VIEW OF BANGKOK, SHOWING FLOATING HOUSES, AND IN THE DISTANCE A BUDDHIST PAGODA. (By the kind permission of Mr. Murray.)

4. THE EASTERN OR MALAY ARCHIPELAGO.—This large assemblage of islands in the south-east of Asia extends over an area nearly as great as that of Europe, although the land surface is only about one-fifth of the area of that continent. It consists of islands both large and small, Borneo, the largest, being more than three times, and Sumatra, the next in size, nearly twice as large as Great Britain. A line of active volcanoes (about fifty in all) passes round the outside of the group, just touching Celebes, in the north-east.

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[1] The island was bought by the British in 1819 on the suggestion of Sir Stamford Raffles, who perceived the peculiar advantages of its situation for Eastern commerce.

The whole group lies within the tropics, and all, except the Philippines, between 10° north and 10° south. Favoured by the monsoon rains, the **vegetation** is almost everywhere as luxuriant as the tropics can show. Dense forests cover the slopes of the mountains, which occupy the greater part of the surface. Coconuts, bananas, and the fruit of the **sago palm** supply food with too much ease to demand much energy on the part of the people. From the sago palm ten days' labour suffices to obtain food that will last a man for an entire year. Other wants are supplied with equal ease. Of clothing little is needed, and for house-building, bridge-building, and all kinds of domestic utensils the **bamboo** furnishes abundance of material, which can be worked with the greatest facility. Hence the native population seldom exhibits any energy except under foreign influence.

Most of the original **inhabitants** are Malays, a brown-complexioned race, with smooth straight hair, rather silent in disposition and subdued in manners, expert in fishing and in the management of small slim boats, with which they make long voyages from island to island. At one time Buddhists, they attained in Java, under Buddhist influences, a high degree of civilisation, of which there are relics in the form of a Malay literature and splendid buildings,[1] rivalling those of Cambodia. Afterwards the Arabs gained them over to Mohammedanism, and that religion is still professed on most of the islands, on some of which the Arabs, though few in number, hold a very influential position. After the discovery of the sea-way to India at the close of the fifteenth century, the Arabs were followed by Portuguese and Dutch, the latter of whom now claim possession of most of the archipelago, except the Philippine Islands, which, together with the adjacent small islands of the Sulu Archipelago, belong to Spain. Chinese traders and miners are pretty numerous.

The **Dutch possessions** consist of the **Great Sunda Islands**, in the west, the **Lesser Sunda Islands**, forming a string stretching eastwards from Java, and the **Moluccas**. between Celebes and New Guinea.

Among the Great Sunda Islands **Java** is that in which Dutch influence has been most exerted, and this island is consequently the most productive and most densely peopled of all large tropical islands.[1] Fields of **rice** and **sugar cane** occupy the lower levels along with

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[1] The most remarkable is the temple of Boro Buddor, near the middle of the island.

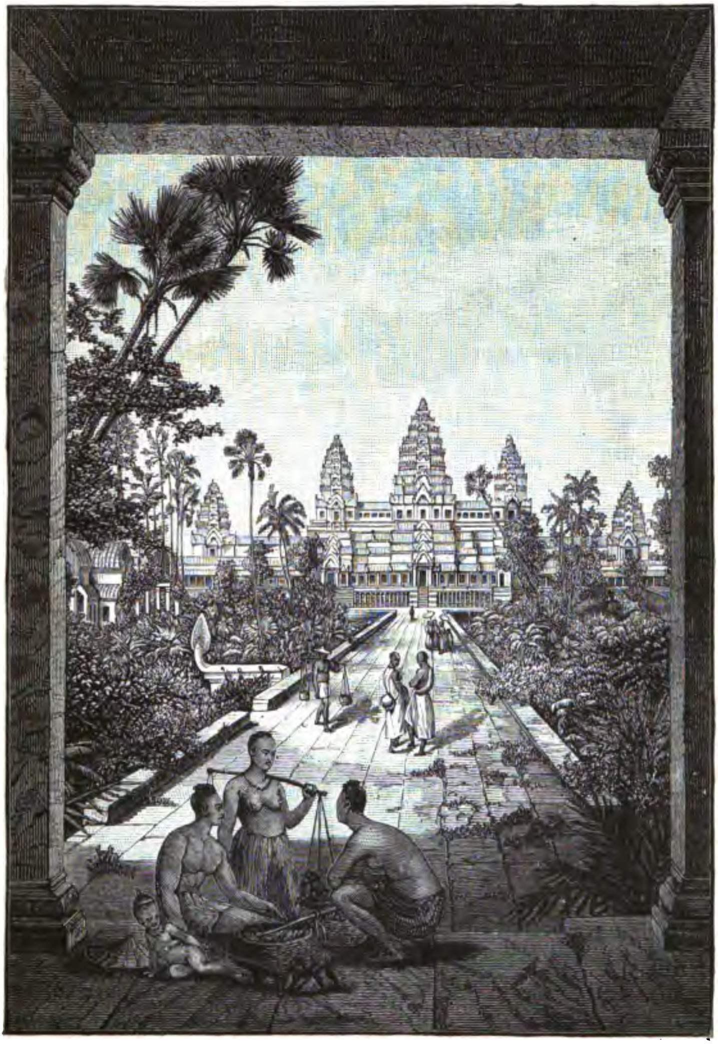

FIG. 43.—THE TEMPLE OF ANGKOR WAT, CAMBODIA.

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[1] See Introd. p. 59.

tobacco, higher up follows **coffee**, and then tea and cinchona.[1] Some of these products are grown in plantations belonging to the government, others on native plantations, the owners of which are bound to sell their crops to the Dutch Government at a low fixed price, so that the revenue thus gained from Java suffices to make up all the deficiencies in the other Dutch islands. Under this system the population has grown from 6,000,000 in 1825 to nearly 20,000,000, and the density now exceeds that of England. The principal towns are on the north coast—**BATAVIA** in the west, **SURABAYA**[2] in the east.

On **Sumatra** the natives are to a large extent independent, living in fortified villages called kampongs. The smaller island of **Banca**, adjoining on the east, is rich in tin. Of **Borneo** only the south-east is claimed by the Dutch, and even this part is chiefly left to the natives. Off the north-west coast is the small island of **Labuan**, belonging to Britain. It produces **coal**. Coal has also been found on many parts of Borneo itself. A considerable territory on the north has lately been ceded to a British company. In the west of the island is the flourishing state of **Saráwak**, subject to a rajah of British family. The very irregular island of **Celebes** has **coffee** and other plantations, under Dutch supervision, in the north-eastern peninsula (Menado), but in most parts the natives are not interfered with. The coffee is said to excel that of Java.

Of the **Lesser Sunda Islands** the largest is Timor, the eastern half forming the last relic of Portuguese rule in the archipelago.

The **Moluccas**, also called the **Spice Islands**, from the nature of their principal products, grow cloves, nutmegs, cinnamon, and other spices, and are very carefully managed by the Dutch.

Spanish rule in the **Philippines** has resulted in the nominal conversion of the inhabitants to Christianity, but has done little for industry and commerce.

Only one island, **Luzon**, has a tolerably dense population (more than 100 to the square mile). Here the chief products are **tobacco**, **sugar**, and a strong fibre known as **manilla hemp**. **MANILLA** (200), on a fine bay on the west coast, is the chief town, and is the largest in the whole archipelago. It has frequently suffered from earthquakes and typhoons.[3]

5. **CHINA** occupies the east of Asia, from the latitude of Southern France to five degrees beyond the tropic of Cancer (in the island of Hainan). Shut off from the rest of Asia on the north and west by scarcely habitable table-lands, and in the south-west from the fertile plains of India by the mountain barriers of Indo-China, it is by nature one of the most isolated countries in the world, and, being at the same time blessed with a soil of extraordinary fertility and a genial climate, it supports a dense population, which has for the most part remained

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[1] See p. 305 *n*. 1.

[2] Spelled in accordance with the Rules, p. 9. The Dutch spelling is *Soerabaja*, which has the same sound.

[3] See Introd. p. 41.

separate from the rest of the world, and developed at an early period a high civilisation, with manners and ideas quite peculiar.

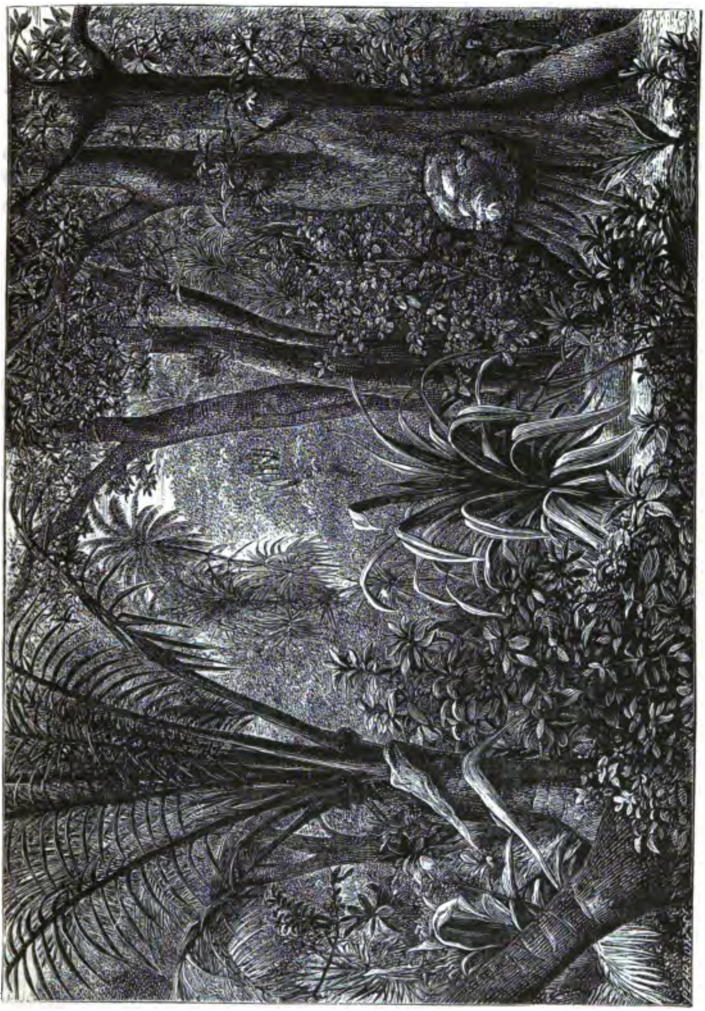

FIG. 44.—A BAMBOO THICKET.

Its total area, even including the parts of Central Asia and Manchuria, now under direct Chinese government, is less than half that of Europe, but the population, according to the most likely estimate that can be formed, is equal to, if it does not exceed, that of our continent.

The country is, **for the most part, elevated**, and **even mountainous**, though there are plains and lowlands of great extent.

The great plain, or lowland region, is that which extends in the east from Peking to the Yang-tse-kiang, interrupted only by the mountainous peninsula of Shan-tung.[1] Of the mountains by far the most important, as a physical feature, are the **Fu-niu-shan Mountains**, forming the eastern continuation of the Kuen-lun, and running from west to east, about the parallel of 34° N., more than half across the country: this range separates **two regions in the north and south, presenting a marked contrast to one another.**

1. As regards **physical features** in the north the valleys and hollows between the mountains are filled with a yellow[2] earthy deposit of great fertility, known as **lœss**, which rounds off the outlines of the surface like snow-fields in high mountains, though the lœss itself, sometimes thousands of feet in depth, is apt to weather away in such a manner as to form terraced perpendicular precipices.[3] To the south this lœss is generally absent, and the mountains, frequently separated by chasmy hollows, stand out in all their grandeur. In the north again the **rivers** are not easily navigable, partly from their impetuosity, and partly from their being filled with shifting shoals derived from the soft lœss. The great river of the north is the rapid **Hoang-ho**, or Yellow River, which now flows in the end north-eastwards into the Gulf of Pechili, on the north side of the mountainous peninsula of **Shan-tung**, but about thirty years ago continued its eastern course to the Yellow Sea, south of that peninsula. To the south is the **Yang-tse-kiang**, one of the finest navigable rivers in the world[4] (hence having on its banks many of the largest towns in China), while its tributaries on the right bank form in many cases admirable means of communication between it and the extreme south.

[1] Shan-tung = Eastern Mountains, as distinguished from Shan-si = Western Mountains.

[2] Hence the names Hoang-ho = Yellow River, Hoang-hai = Yellow Sea, due to the colouring derived from this deposit.

[3] See cut, p. 255. This mode of weathering is probably due to the presence in the lœss of innumerable minute perpendicular channels lined with calcareous deposits. In Northern China millions of human beings live in caves hollowed out in the sides of these precipices. The lœss is believed to have been blown into the hollows which it fills from the highlands of Central Asia. See p. 25.

[4] The continuous navigability of the Yang-tse-kiang for steamers extends as high as Ichang, in about lon. 111½° E., but is there stopped by dangerous rapids.

2. As regards **communication**, in the north are numerous roads, and horses, mules, asses, and the two-humped camel are abundant as beasts of burden, while in the south human carriers are mostly employed where boats and ships are not available.

3. As regards **products**, the north is the land of **wheat, millet, cotton**, and **pod-fruits**, the south of **rice, tea, silk, sugar**,[1] and **opium** (the last chiefly in the south-west); and while in the north agriculture may be pursued on the fertile lœss as high as 8,000 feet above sea-level, in the south it is mostly confined to the plains and valleys, and to artificial terraces[2] cut out on the lower slopes of the mountains. Only in the western parts of the south, the province of **Se-chwan**, where a fertile red soil takes the place of

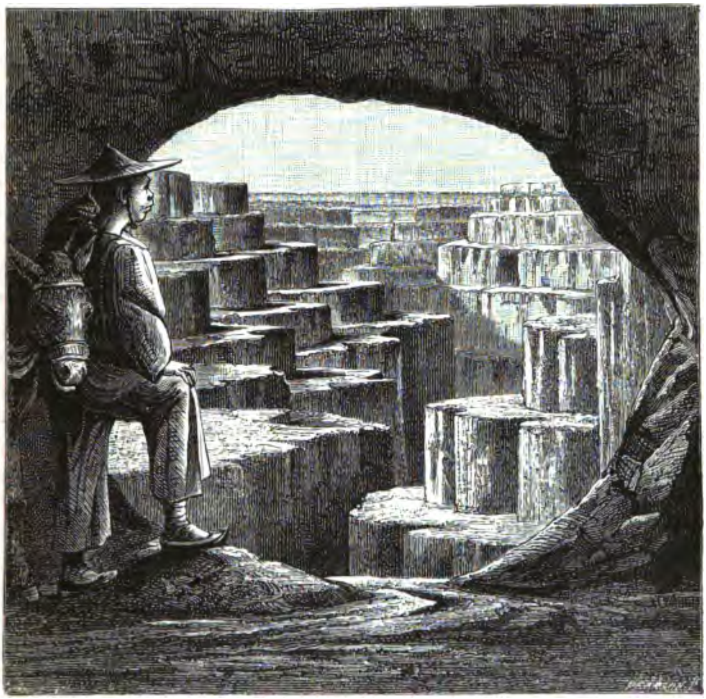

FIG. 45.—VIEW AMONG THE LŒSS TERRACES OF NORTHERN CHINA.
(By the kind permission of Mr. Dietrich Reimer.)

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[1] The best Chinese sugar is grown on the island of Formosa.

[2] See Introd. p. 37 (3) and comp. p. 260.

the yellow lœss, is agriculture pursued to a great height up the mountain sides.

4. As regards **climate**, there is in the north only an alternation between a warm, cloudy, and rainy summer, and a long winter with clear skies and icy north winds; while in the south, on the other hand, there is a more gradual succession of the seasons.

People.—The original seats of the Chinese are unknown, but it is certain that this people immigrated from the north, and it was in the northern part of China that the emperor, an absolute monarch, acquired the title of 'Hoang-ti,' meaning 'Lord of the Yellow' (earth). The Chinese are the chief representatives of the Mongolian type of the human race, but though they make up the great bulk of the population in China itself, and, being by far the most industrious and energetic race in Asia, are rapidly overflowing into all the neighbouring countries and islands in the south-east, and are even spreading beyond the limits of the continent, they have for the last 250 years been subject to a Manchu dynasty, which invaded China from the north-east.[1] In **religion** they are **nominally Buddhists**, but all religions that have taken a strong hold on the Chinese have been reduced by them to little more than ceremonial observances, and the worship to which the people most stedfastly cling is the worship of their forefathers, tablets in honour of whom are preserved in every Chinese household. The system of Confucius, an ancient Chinese sage whose descendants are still held in great reverence by the Chinese, can scarcely be called a religion at all, consisting as it does merely of a code of duties. It is the system adhered to by the learned classes, and all the higher officials are obliged at stated times to perform certain rites connected with it.

Education is prevented from being general by the vast number of characters used in writing in Chinese, but there are nevertheless few countries in which more direct encouragement is given to learning. All government offices are the reward of success in examinations.

The Chinese in their own country have maintained their isolation in a large measure down to the present day. From a remote period there has been a trade with the West by land, chiefly in silk. Intercourse with Europe by sea began in the early part of the sixteenth century, but was confined to Canton till within the last half century, since when several ports have been opened by treaty (hence treaty ports) to European and American commerce. The **chief articles of export** are now **silk** and **tea**, and the **chief import, opium,** from India; next to which come various **manufactured goods.**

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[1] It was from their Manchu conquerors that the Chinese adopted the practice of wearing their hair in a 'pig-tail,' that is, in a single long plait hanging down behind.

Even yet, however, the whole foreign trade of China is only about one-fortieth of that of Europe; and the aversion of the Chinese Government to the construction of railways is an obstacle in the way of its development. The construction of a network of railways has often been proposed, and would have all the more importance, since China is known to possess enormous **coalfields**—coalfields the united extent of which is estimated to be twenty times as great as that of the coalfields of Europe. The **gold, copper,** and other minerals of the province of **Yün-nan** in the extreme south-west are among the products which it is hoped to make accessible to European commerce by a railway through Indo-China. Telegraphs are already extending in China with remarkable rapidity.

The large **towns** of China have been known by repute in Europe since the time of the Venetian traveller Marco Polo (end of the thirteenth century), but his accounts were then ridiculed as exaggerated. Even according to the best estimates of the present day, however, China can boast of several towns containing more than a million inhabitants.

PEKING, the seat of government, stands in a densely populated plain in the north-east (prov. Pechili), but in one of the dreariest parts of it. Its population is variously estimated at from 500,000 to upwards of a million.[1] Its port is **TIENTSIN** (1000), on the Pei-ho, a treaty port accessible to Chinese junks,[2] but much more important as the northern terminus of the Grand Canal, a canal 700 miles in length, which forms the great channel of communication between north and south,[3] as far as **HANGCHAU**,[4] at the head of the inlet or gulf of the same name. Of the towns on the Yang-tse-kiang the largest is **HANKAU**[4] (700), at which place, though lying in the centre of the country, sea-going ships can be freighted with tea from the rich tea-growing districts all round. Lower down lies **NANKING**[5] (500), a former capital of China, and still a great seat of Chinese learning. On the Wusung, a little above the mouth of the estuary of the Yang-tse-kiang, stands **SHANGHAI** (350), the most important of the treaty ports, the principal centre of foreign commerce on the mainland of China. The chief town of the south, and indeed the most populous apparently of all China, is **CANTON** (properly Quang-tung, which is the name also of the province in which it lies; pop. 1600), on the delta of the Si-kiang (a branch of which is known as Canton River). It lies in the middle of a region rich in rice, sugar, and indigo, and possessing admirable water communication with the silk and tea districts further north. Close by, on the river, a population of 300,000 dwells in boats moored in long rows.

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[1] All the estimates of population of Chinese towns are very uncertain.

[2] The name of a kind of flat-bottomed ship, high in the prow and stern, used in China and Japan.

[3] The Grand Canal is no longer navigable throughout, on which account one of the Chinese railway schemes most actively promoted at present is that for a railway from Nanking to Tientsin and Peking.

[4] Also spelled *—ow*. See Rules, p. 9.

[5] Meaning 'Southern Court,' as distinguished from Peking, 'Northern Court.'

At the mouth of the estuary of the Canton River are two small islands, in European hands: at the northern entrance the rocky island of **Hongkong**, with the town of **VICTORIA**, belonging to the British; at the southern, **Macao**, belonging to the Portuguese. Of these the former is by far the more important, being the principal seaport of Southern China.

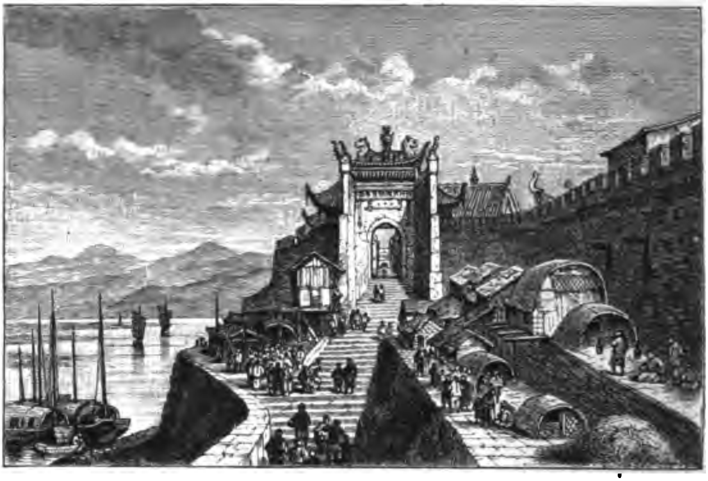

FIG. 46.—GATE AT SHANGHAI. (By the kind permission of Messrs. Chapman and Hall.)

Manchuria, in the north-east of China, separated before the accession of the Manchurian dynasty by a long palisade, is a fruitful country, rich in pastures, hitherto thinly populated, but now receiving large numbers of Chinese colonists in the south. **MUKDEN**, on the Liau-ho, in the interior, is the capital, and **Niuchwang** (Newchwang), on the coast, is a rising treaty port.

6. KOREA, the mountainous peninsula to the east of the Yellow Sea, is only now beginning to open itself up to foreign intercourse.

In 1883 a treaty port was opened on the west coast, near the capital **Seul**. Ginseng, a drug highly prized by the Chinese, is exported as a monopoly of the king. The small island of **Port Hamilton**, off the south coast, was acquired by the British in 1885 as a coaling station.

7. CENTRAL ASIA.—The vast mountain-girt tablelands to the north and west of India and China (covering an area of about two-and-a-half millions of square miles in all) are mostly uninhabited solitudes, in some parts of which explorers may travel for three months together without seeing a human being.

Tibet.—The southern part of the area is the loftiest tableland in the world, in the south and west nowhere less than 12,000 feet in height, though sinking in the north, at the base of the Kuen-lun Mountains, to about 4,000 feet in some parts. On this great tableland lie the head-waters of all the great rivers of South-eastern Asia. The inhabitants, who profess an exceedingly corrupt form of Buddhism, and suffer under an oppressive priesthood, are chiefly settled along the narrow basin of the Sanpu (Upper Brahmaputra). Here stands **Lhassa**, the residence of the Dalai Lama, or high-priest, who is worshipped as a god.

North of Tibet and China lies a long relatively depressed area, mostly desert, called by the Chinese the **Han-hai**, or Dry Sea, a name so far appropriate that the region is known to have actually been a sea in some previous period of the history of the world. This area, stretching from the abrupt eastern slopes of the Pamir plateau, in the west, to the so-called **Khingan Mountains**[1] in the east, is as long as the Mediterranean, and, like it, is divided into two portions by a narrowing in the middle. This narrowing is important for two reasons: first, because it reduces the journey across the desert to fourteen days; and secondly, because at this part are situated the only two openings by which great bodies of people can emerge from the Han-hai, either northwards along the northern base of the **Tian-shan Mountains**, or southwards into China along the **Nan-shan Mountains.** Through these gates[2] great hordes of mounted barbarians have swept north and south at different periods, and hence they are now included in a province directly under Chinese rule. It was to prevent such inroads that the Chinese in the third century erected the **Great Wall**—a stone-faced earthen rampart, more than 1,200 miles in length, extending from Peking to Suchau, on the northern slopes of the Nan-shan Mountains; but the wall (now in many places in a state of decay) did not always prove effectual.

In both halves of the Han-hai a caravan trade with China is carried on. The western half, or **Tarim basin**, forming **Eastern Turkestan**, is inhabited by Mohammedan Tatars, who during the short but hot summers, grow wheat, maize, and even rice and wine along the banks of the numerous short rivers which dry up in the sands soon after quitting the base of the mountains. The chief towns are **Kashgar** and **YARKAND**,[3] the former the starting point of the caravans across the Pamir to the valley of the Sir, the latter to the valley of the Amu.

[1] In reality merely the eastern edge of a lœss plateau.

[2] Compare the 'Burgundy Gate' (p. 136), and the 'Moravian Gate' (p. 171).

[3] Both situated on the routes of the old overland silk trade between China and the West.

The eastern half of the Han-hai is the **Shamo**,[1] or **Gobi**, which, along with the mountain-traversed area stretching westwards to Siberia, makes up Mongolia, a region inhabited by nomadic Mongols, Buddhists in religion. **Maimachin**[2] is the town of greatest importance.

All Central Asia is either directly or indirectly subject to China.

8. **JAPAN** consists of a group of large islands opposite the Sea of Japan, together with strings of smaller ones in the north, opposite the Sea of Okhotsk (the **Kurile Islands**), and in the south opposite the mouth of the Yellow Sea (**Lu Chu Islands**[3]). Their area is about two-thirds larger than that of Great Britain, and their population (about thirty-seven millions) larger than that of the British Isles. **Nippon, Sikoku**, and **Kiusiu**, the most populous islands in the group, lie in the same latitude as the eastern or more southerly half of the Mediterranean (including the Ægean Sea).

In some respects Japan may be regarded as an Asiatic Britain. The islands are well situated for commerce, their shores deeply indented, and provided with numerous harbours, especially in the east and south; and the difference in temperature is less than might be expected from the latitude.[4] At Tokiyo, the capital, which is in the latitude of Malta, the hottest month is about 15° warmer than at London, but the coldest a few degrees colder. **Yezo**, the northernmost island, though in the latitude of Southern France, has a severe climate, and is inhabited only by from 100,000 to 150,000 people round the coasts.

The entire group is mountainous, so that even on the populous islands the level cultivated ground, including the terraces on the hill slopes,[5] forms less than one-eighth of the entire area. The few plains of any importance lie along the lower courses of the rivers. The principal mountain peaks are conical volcanoes, active or extinct, which rise to a great height above the general elevation of the mountain ranges, thus leaving low and easy passes between. **Fusinoyama**,[6] the highest, is upwards of 12,000 feet in height.

The old lavas from these volcanoes, crumbled by vegetation and changes of weather and washed down by rain, have yielded to the plains and valleys an exceedingly rich soil,[7] and this, together with the warm summers and the copious summer (monsoon) rains, renders the low grounds so productive that, small as their area is, the density of the population in all the three more populous islands is upwards of 300 to the square mile. The principal summer crop is **rice** (the staple food of the people), but **barley** and **wheat** are largely grown as winter crops, the young grain springing up before the winter, and remaining green, but not growing all the winter through. **Tea** and **silk** are likewise staple products.

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[1] Chinese = 'Sea of Sand.' A portion of this desert extends even to the east of Khinghan.

[2] See p. 223.

[3] This name, a Chinese one, is more familiar than the Japanese one, Riu-kiu, these islands having been claimed by the Chinese (as well as the Japanese) till 1879. The Chinese language has no *r*, the Japanese no *l*.

[4] See Introd. p. 51.

[5] See Introd. p. 37 and comp. p. 255.

[6] Also known as Fusiyama, Fujiyama, and Fujisan. *Yama* = 'mountain' in Japanese, *san* in Chinese.

[7] See Introd. pp. 25 and 37–8.

The Japanese, **mostly Buddhists in religion**, attained a high degree of civilisation before they came much into contact with Europeans and Americans, and their manufacturing industries had reached a corresponding degree of advancement. Their **silk fabrics** and **lacquered wares** are particularly celebrated, and their skill in lacquering has even given a word to our language (japanning). For a long period the Japanese showed the same jealousy of foreign intrusion as the Chinese, and foreign trade was strictly limited to Chinese and Dutch. Now, however, several ports have been opened to other nations, and foreign trade has been greatly extended in consequence. Still more recently the Japanese have begun to show an eager readiness to learn from Western nations: to teach European languages (especially English) in their schools, to employ foreign teachers of science in their colleges and universities, and to send Japanese students to the universities of Europe and America for education. At present the use of the extremely difficult Chinese mode of writing is a great hindrance to education, but an agitation is now on foot for the adoption of the Roman alphabet.

The capital of Japan, the residence (since 1869) of the Mikado, or ruler of the country, is **TOKIYO**, formerly called Yedo (800), situated at the head of an eastern bay, on one of the most extensive and best watered of the Japanese plains. It is a treaty port, but being accessible only for small vessels, the foreign commerce is chiefly centred at **Yokohama**, another treaty port on the same bay. West-south-west of Tokiyo, at the southern extremity of a beautiful lake in another rich plain, is **KIYOTO** (250), capital of Japan for 1,000 years previous to Tokiyo, and still the chief seat of Japanese industry, the centre of Japanese art, and the most interesting of Japanese towns, in virtue of its general appearance and historical associations. **OSAKA** (300), and **Hiogo**, on the bay to the south, are its ports (both treaty ports). **Nagasaki**, in the south of the island of Kiusiu, is a treaty port, with one of the deepest and safest natural harbours in Japan. **Niigata** is the only port on the west coast, and is accessible to shipping only in summer, navigation being stopped for half the year by the strong surf which beats along the whole of the flat and dangerous west coast during the prevalence of the north winds of the winter monsoon.

AFRICA.

Approximate latitudes: (Cartagena) Cape Blanco, the northernmost point of the continent, 37½° N.; north of Lake Victoria Nyanza (Cape Romania), 1° N.; (Montevideo) Cape Agulhas, the southernmost point, 35° S.

Approximate longitudes: Cape Verde to Cape Guardafui, 17° W. —51° E.

AFRICA is a continent lying to the south of Europe, and bearing some resemblance in outline to the other great tropical continent of South America, inasmuch as it is broader in the north, and tapers towards the south, but, having a more northerly situation than South America, its broader part is not so entirely tropical as in that continent. Its total area is about eleven and a half million square miles, or more than three times as large as that of Europe; its population is very uncertain, but it is estimated at upwards of 200,000,000. Misgovernment, internal wars, and the practice of **slavery** keep down the density of the population almost everywhere in the interior.

The superficial features contrast markedly with those of all the other continents. Africa has no wide plains near the coast, but consists principally of plateaux, varying from about 2,000 to 9,000 feet in height, surmounted in many places by mountain chains, and generally sinking pretty rapidly to the coast, where the strips of lowland are comparatively narrow. The principal mountain ranges are those of the **Atlas**, which run parallel to the western half of the Mediterranean, and the **Drakenberg**[1] or **Kwathlamba Mountains**, in the south-east; the principal series of plateaux, one which begins in the south of the Red Sea and proceeds southwards nearer the east coast than the west, finally turning westwards in the north of the Zambezi basin.

Towards the east coast these plateaux are surmounted by two lofty mountains, **Kenia** and **Kilimanjaro**, rising within a short distance of the equator above the snow-line, hence to upwards of 16,000 feet. On these plateaux lie also a number of **great freshwater lakes.** The largest of all is **Lake Victoria Nyanza**, or **Ukerewe**, on the equator, a lake estimated to have an area of about 30,000 square miles, and hence little smaller than Lake Superior, in North America. To the south-west is the long and narrow **Lake Tanganyika**, about half the size of Victoria Nyanza, and still further south **Lake Bangweolo**. East of the latter, on a lower plateau, is **Lake Nyassa**, about the same size as Tanganyika. All these lakes lie within the southern half of the torrid zone, except a small portion of Victoria Nyanza.

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[1] Dutch = Dragon Mountains. See p. 274 *n.*

All the great **rivers** of Africa except the Nile belong wholly to the tropical portion of the continent.

The **Nile**, the longest of all, has its head-waters collected by Lake Victoria Nyanza, from which it issues in the north, and after touching the end of a smaller lake (**Mwutan**[1]), in the north-west, winds northwards to the eastern half of the Mediterranean. From Abyssinia it receives two important tributaries on the right, the **Bahr-el-Azrek**, or so-called Blue Nile,[2] and the **Atbara**, but in the lower half of its course it does not receive a single tributary on either bank. The other three great rivers of Africa, the Niger, Congo, and Zambezi, all describe great curves among the interior plateaux before making their escape to the coast through the bordering mountains. The **Niger**, rising far west, sweeps northwards, and then south-east and south, before it empties itself by a delta into the Gulf of Guinea. The **Congo** has its head-waters collected by Lake Bangweolo 12° south of the equator, and reaches 2° north before bending southwards again to enter the Atlantic Ocean in about 6° south. In respect of the volume of its water discharge[3] this river is by far the greatest of African rivers. The **Zambezi** has numerous headwaters in a region thickly streaked with rivers, partly belonging to its basin and partly to that of the Congo, between 10° and 15° south, and after describing an S curve enters the Indian Ocean (Mozambique Channel) by a delta opposite the middle of Madagascar. All these rivers are great navigable streams, but all of them have their navigation interrupted, in their lower course, by **falls** and **cataracts**. In the Nile, however, these are high enough up to allow of nearly 800 miles of unimpeded navigation from the mouth.

The nature of the surface, together with other circumstances, causes Africa, **as a whole, to be very deficient in rain.** It lies in latitudes where the atmosphere is always able to retain large quantities of vapour uncondensed,[4] and, consisting like Spain mainly of plateaux with bordering mountains,[5] its interior is in most parts reached only by winds that have been deprived of the greater part of their moisture. Hence the only regions with abundant rainfall are the western part of the equatorial area and narrow strips on the south and south-east coasts. Two regions of exceptional drought occur, one in the north and one in the south.

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[1] Sometimes called Lake Albert Nyanza; but since this lake, formerly supposed to be one, has been discovered to be made up of two lakes, the northern one is distinguished as Lake Mwutan, the southern as Lake Muta.

[2] *Bahr* is Arabic for a stream. *Bahr-el-Azrek* means properly the turbid stream, as distinguished from the *Bahr-el-abiad*, or white (that is, clear) stream (of the Nile itself above its confluence with this tributary).

[3] The discharge of a river is the volume of water it pours into the sea within a given time, usually expressed as so many feet per second. It is estimated by finding the breadth, the average depth, and average rate of a river at the mouth, and multiplying.

[4] See Introd. p. 49–50.

[5] See p. 194.

The former is the **Sahara**, extending from the Nile to the Atlantic, between the Atlas Mountains and the Eastern Mediterranean in the north, and the Soudan countries in the south, a region visited chiefly by dry winds from the Asiatic continent. Much of this vast area, measuring 3,000 by 900 miles, is absolute desert, sandy, stony, or rocky, but where there are temporary streams [1] or underground moisture there are inhabited oases, some of them thousands of square miles in extent. The other region of exceptional drought is in South-west Africa, north of the Orange River, where the dryness of the air is increased by a cold current which creeps along the south-west coast, and reduces the evaporation.[2] This region is known as the **Kalahari Desert**, though it is in fact mainly covered with thin grass, and is generally visited by copious dews at night.[3]

On the outskirts of both of these regions is an area of inland drainage, or in other words an area in which the rivers terminate in an inland and therefore salt [4] lake. South of the Sahara is the drainage area of **Lake Chad**; north of the Kalahari that of Lake Ngami.

The **vegetation** and animal life of Africa answer to the climate. Dense **liana[5]-bound forests** occupy the moist equatorial regions, but the greater part of the continent capable of supporting vegetation at all is occupied by **grassy plains** with trees only thinly scattered over them, or without trees at all. On these plains tall thick-stemmed leafless prickly euphorbias [6] are in many places conspicuous, and in the south there is an immense variety of bright-flowered woody heaths. In the desert almost the only vegetation consists of thorny shrubs or tufts of coarse grass [7] growing here and there, and in the oases the sole dependence of the people is the **date-palm**,[8] which loves a sandy soil, but can suck up moisture by its long roots from a great depth. The principal cultivated grain is durrah.[9]

The characteristic **animals** of the continent are **fleet-footed grass-feeders**, and above all **antelopes**, which are to be seen at certain times assembled in countless herds and in great variety along with **zebras**, **quaggas**, and other animals, at well-known watering places, where they are watched at evening by the lion, hyæna, and other beasts of prey. The swift-running bird, the **ostrich**, also scours the plains, and where there are clumps of trees small troops of **giraffes** may be seen grazing the lower twigs with the aid of their long necks, or galloping from clump to clump across the country. Elephants and rhinoceroses haunt the forests and marshes, and hippopotamuses and crocodiles are found in many of the rivers. Monkeys and apes (chimpanzee and gorilla) are found both among trees and among rocks.[1] In the desert the **camel** (single-humped) is as indispensable as a beast of burden as the date-palm on account of its fruit.

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[1] Generally known by the Arabic name of *wadis*

[2] See Introd. p. 51-2.

[3] See Introd. p. 52-3.

[4] See Introd. p. 31.

[5] Lianas are climbing and twining trees, such as are found in great abundance in all tropical forests.

[6] See Introd. p. 59.

[7] See cut, p. 26.

[8] See cut, p. 265.

[9] See p. 233 *n.* 4.

The **inhabitants** of the north and north-east of Africa, including the Abyssinians (a Semitic people), Egyptians, and Berbers, as well as the Asiatic settlers, the Arabs and Jews, are all markedly different from those of the south and south-west, among whom the Negro features are more or less prominent. Among these features are protruding jaws, swollen lips, projecting heels, a black or very dark skin, and woolly hair, all of which are most highly developed in the true Negroes inhabiting the region to the south-west of the Sahara. The Jews are settled in considerable numbers in the Atlas States, and the Arabs are more widely diffused, being settled in large numbers in the north and east, and having the command of the trade (largely a slave trade) of a great part of East and Central Africa. The **Mohammedan religion** has been introduced by the Arabs into all North Africa,

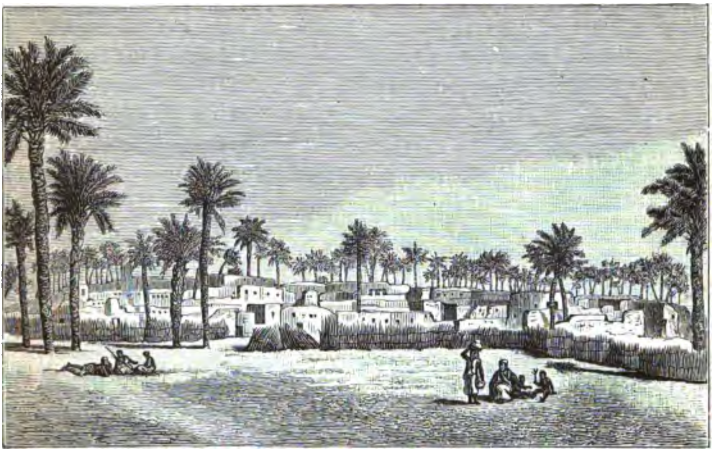

FIG. 47.—KATRUN, AN OASIS IN FEZZAN SURROUNDED BY DATE-PALMS.

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[1] Comp. South America, p. 302.

East Africa as far south as the Zanzibar coast, and into the Soudan states between the Nile and the Niger basin; and in Central Africa Mohammedanism is constantly gaining ground. Ancient Christian sects survive in Abyssinia and Egypt (in the latter country called **Copts**). The rest of Africa is heathen, except where there are European settlers (chiefly English and Dutch colonists in the south).

COUNTRIES AND REGIONS OF AFRICA.

1. **EGYPT**, the country of the lower Nile, together with a portion of North-west Arabia, including the peninsula of Sinai, has an area of between 300,000 and 400,000 square miles; but so large a part of this is desert that the whole extent capable of cultivation is less than twice the size of Wales. This cultivated region is almost confined to the delta of the Nile (Lower Egypt) and the narrow valley, varying from ten to fifteen miles in breadth, which borders that river above the delta (Upper Egypt). There accordingly the immense majority of the six or seven million inhabitants of the country are settled, and the density of population is very high (above 500 to the square mile). In this nearly rainless region the regular **inundations** of the river occurring in autumn (in consequence of the monsoon rains of Abyssinia) supply both moisture and a fertile soil, as on the banks of the Euphrates and Tigris. Hence from the remotest period this valley has been the seat of a dense population, and in ancient times was occupied by one of the oldest of civilised nations, remains of which are to be found both in Lower and Upper Egypt. In Lower Egypt are the famous **pyramids** at the head of the delta opposite the modern Cairo; in Upper Egypt the ruins of the equally wonderful **temples of ancient Thebes** (at Luxor and Karnak).

At all times the principal occupation of the inhabitants of this valley has been **agriculture**, in the pursuit of which water-wheels and other irrigating apparatus are necessary. The principal products, besides grains grown both for food and for export, is **cotton**, which now forms by far the largest of the Egyptian exports. The cultivators (the fellahîn) are oppressed by a despotic ruler (the khedive), who is tributary and pays a nominal allegiance to Turkey,[1] but the government is at present to a large extent under English influence. The occurrence of petroleum may ultimately give some importance to the otherwise unproductive part of Arabia which belongs to Egypt.

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[1] Egypt was conquered by the Turks in 1517.

Railways connect the principal towns in the delta, and one line ascends several hundred miles up the Nile valley. The **Suez Canal,** which allows the largest ships to cross the isthmus of that name from Port Said, on the Mediterranean, to Suez, on the north-western arm of the Red Sea, runs through Egyptian territory.

The capital is **CAIRO**[1] (375), at the head of the delta, near the site of the ancient Memphis, connected by the Mahmudieh Canal as well as by railway with **ALEXANDRIA**[2] (230), which has in consequence greatly increased its population, though even in size it is still far behind what it was in ancient times, when it was the residence of the Ptolemies, and for centuries the chief seat of Greek culture, and numbered, it is said, about a million inhabitants.

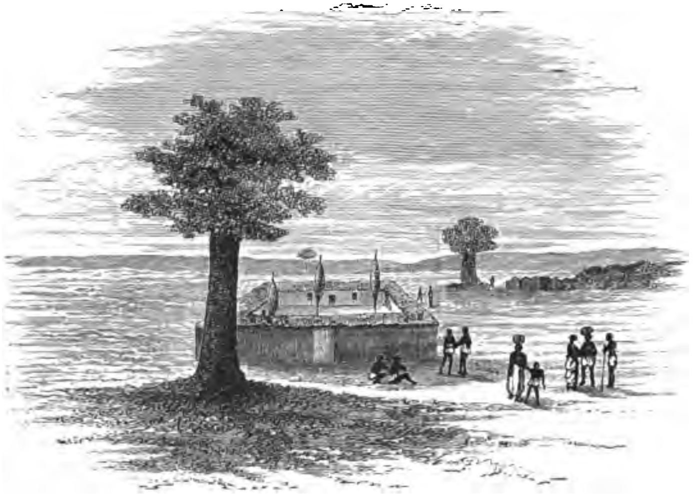

FIG. 48.—A TEMBE, ONE OF THE COMMONEST FORMS OF DWELLING IN CENTRAL AFRICA.

The name of **Egyptian Soudan** has been given since 1821 to vast regions in the south of Egypt, which, when the power of the khedive was at its highest, almost reached the equator, and brought up the area of his dominions to upwards of a million square miles.

These regions (**Nubia,**[3] **Kordofan, Dar-for,** &c.) are extremely arid in the north, but rains begin to be more abundant about the latitude where the Nile is joined by its lowest tributary, the Atbara; and the

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[1] Founded by the Arabs in the first half of the seventh century, after the conquest of the country by that people during the rise of the Mohammedan religion (see p. 234).

[2] Founded by and named after Alexander the Great, 332 B.C.

[3] Egypt proper is now considered to end, and Nubia to begin, at the second cataract of the Nile (the Wadi Halfa), about lat. 22° N.

rainy season increases in duration as one goes southwards. The commercial and political centre of this region is Khartum, at the confluence of the White and Blue Nile; and Suakim (Sawákin), on the Red Sea, **is the chief port. At present the government in these regions is wholly unsettled, the tribes having risen in rebellion against the rule of Egypt.**

2. INDEPENDENT SOUDAN.—The term **Soudan** also embraces all the states south of the Sahara between the Nile and the sources of the Niger. A race called the **Fulbeh** is rapidly spreading in these countries, and is perhaps the most energetic of all tropical races, certainly of all those of Africa.

Many parts of this vast area are thickly inhabited, especially near the angle of the Gulf of Guinea, where the rains are more abundant. Throughout this region a kind of palm, called the *deleb*, is almost as important for the food it yields to man as the date-palm further north. But the people also grow various kinds of grain and rear cattle. **Kuka**, the capital of Bornu, near the west coast of Lake Chad, is the largest town in the Soudan; but **Timbuktu**, situated on the edge of the desert,[1] on the most northerly part of the Niger, is more familiarly known in Europe from the fact of its being the centre of trade between Western Soudan and North Africa, the focus of numerous caravans which take their way thither between November and January.

3. WESTERN MEDITERRANEAN STATES.—(*a*). **Tripoli,** a vast region opposite Sicily and Italy, with a total area equal to four times that of Great Britain, but in which the whole extent of cultivated land is estimated to be only about as large as the county of Norfolk. The cultivated land lies chiefly on the coast, partly in the neighbourhood of the town of Tripoli, partly on the borders of the plateau of **Barka**, where in ancient times stood the Greek colony of *Cyrene* and the other towns of Cyrenaica. Tripoli, long a dependency of Turkey, is now administered as a province of the Turkish Empire. Population about one million. In this province, as in all the countries to the west, the population is mainly composed of Arabs, Berbers—a race peculiar to North Africa—and Moors, the last being a mixed race descended from the two others, and inhabiting the towns. On the whole line of coast (700 or 800 miles) there is only one seaport of consequence, that of **Tripoli,** which is chiefly important as the centre of the trade across the desert, the point of arrival and departure for camel caravans, through the oases of **Fezzan,** to Bornu, and south-westwards to Timbuktu.

(*b*). **Algeria and Tunis,** the former a French colony since 1830, the latter under French control, are both traversed by the parallel chains of the **Little** and **Great Atlas,** which in Algeria leave only a narrow strip of well-watered cultivated land (the **Tell**), between the Little Atlas and the coast, while in Tunis the plateau which separates them, sinks down towards the Gulf of Tunis, and becomes the fertile valley of the **Mejerdeh**, watered by a permanent river. The climate and products of the lowlands are similar to those of Southern Europe (see pp. 67–8). Round the city of Algiers are grown fine early vegetables for the London and Paris markets. **Alfa**, the only product of the plateau (which in Algiers has a breadth of more than a hundred miles), is one of the chief exports of the country, and is mainly sent to England for use in paper-making. Since Algeria has been occupied by the French, much has been done for the development of the country chiefly by the making of roads and railways, but also by the sinking of **Artesian wells.**[1]

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[1] See Introd. p. 61 (3) (*c*).

French settlements in the colony have not been very successful, but in the portion under cultivation (chiefly the Tell) the Berbers (here called **Kabyles**[2]) are settling in increasing numbers. The Berbers are essentially an agricultural people, and present a complete contrast to the Arabs, who are pastoral and nomadic. These are therefore found solely in the remainder of the territory, which is under military government, and, above all, in the region south of the Atlas, the **Biled-ul-jerid**, or 'Land of Dates.' In the east of the territory a district occupied by shallow salt lakes, called *shotts*,[3] is beneath the level of the Mediterranean; and proposals have been made for piercing the intervening barrier and letting in the waters of that sea to submerge the district.[4] The whole **population** of Algeria, which, exclusive of the portion belonging to the Sahara, is as large as the British Isles, is under 3,500,000. Tunis, with a much smaller area (half the size of Great Britain), has about two millions, and is hence much more densely peopled; and the town of **TUNIS** is the only one in the two countries with a population above 100,000. It stands on the Gulf of Tunis, about ten miles from the ruins of ancient *Carthage*. The coast towns of **Algiers** (in the middle), and **Oran** (in the west), and the inland town of **Constantine** (in the south) give name to the three civil provinces under French rule in Algeria.

(*c*). **Morocco,** a country subject to a Mohammedan despot, and generally known as the Empire of Morocco. Its area can only be vaguely estimated at three or four times that of Great Britain, but as in Algeria the bulk of the population is confined to a limited extent of fertile and comparatively well-watered land, called the Tell, extending along the base of the mountains.[1] To this country belong the **Atlas Mountains proper**, which, sweeping round from Cape Ghir on the west coast, attain as great an elevation as the Pyrenees, and ultimately merge in the coast mountains on the north, called **Er Rif**, and can hardly be regarded as continuous with the longer ranges which bound the plateau of Algeria and Tunis. This plateau extends only a short distance into Morocco. The area of the Morocco Tell is estimated at somewhat less than the area of Great Britain; the total population of the empire is roughly calculated at about six millions; but nothing but good government and proper cultivation are wanted to make it much more numerous.

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[1] Known in this region, however, long before the arrival of the French. See p. 30.

[2] The representatives of the ancient Numidians, who furnished the Roman army with its best cavalry. From among the Kabyles the *Zouaves* of the French army were at one time recruited, as the *Turcos* are still.

[3] Shotts also exist on the plateau. [4] The project is now abandoned as too costly.

Almost all kinds of grain might be grown in abundance, and the country is also rich in minerals and timber. All the chief towns, **Fez**, the capital, and **Mekinez** in the north, **Morocco** in the south, lie at some distance from the west coast among the mountains. They are all manufacturing towns, and the preparation of the kind of leather to which Morocco gives name is still an important industry. Fez makes and exports great quantities of red cloth caps, which take their name from that city, and are almost universally worn in Mohammedan countries.

4. WEST AFRICA FROM THE SENEGAL TO THE CONGO.—Along the whole coast in this region English, French, and Germans have established at intervals trading stations and protectorates. The French have pushed their influence furthest into the interior—up the whole of the Senegal to the Upper Niger—and they have commenced the construction of a railway along the former river, which is navigable for about half its length, but higher up has its navigation stopped, like other African rivers, by rapids and cataracts. The French also claim a protectorate over most of the region between the Lower Congo and the Atlantic to the north of the Gaboon River. The centres of English influence are **Sierra Leone**, on the surf-beaten west coast, **Cape Coast Castle**, on the Gold Coast (the whole of which is now British), and **Lagos**, further east, on the Slave Coast. The two latter belong to **Upper Guinea**, which is a general name for that part of the west coast which looks to the south. The German stations are principally in the neighbourhood of the **Cameroon Mountains**, opposite the Spanish island of Fernando Po, in the angle between Upper and Lower Guinea; but Germany has also another small settlement to the east of the Gold Coast called **Togo Land.** Two native states of some importance, **Ashanti** and **Dahomey**, also touch the coast, and the **Pepper Coast**, which runs from north-west to south-east, belongs to the republic of **Liberia**, which was founded early in the present century by some philanthropists as a home for freed slaves.

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[1] See Introd. p. 52.

Agriculture is generally neglected, but where pursued rice and ground-nuts[1] are the chief products. The **principal exports** of this region are **palm-oil**[2] (especially from Lagos, the chief centre of trade on the whole of the Guinea Coast), **gold** (especially from Cape Coast Castle), **ivory** and **india-rubber** (obtained from a liana[3]); and the articles taken by the natives in exchange are chiefly coarse cotton and other cloths, rum, fire-arms, and gunpowder.[4] Coffee plantations, under the supervision of Europeans, have been tried in some places with success. For Europeans the coast, as everywhere else in tropical Africa, is very unhealthy.

5. THE CONGO FREE STATE.—Till 1877, when the Congo was descended by Stanley, the course of that river was unknown. The descent of the river on that occasion made known the fact that this magnificent stream affords **1,000 miles of uninterrupted navigation** between Stanley Falls (just before the river first crosses the equator) and Stanley Pool, about 300 miles from the mouth. On the next 200 miles numerous falls and rapids occur to interrupt the navigation. After Stanley's descent of the river an International African Association was founded, under the head of the King of the Belgians, for the exploration of Central Africa, and more particularly for the opening up to commerce of the Congo basin, which seems to be pretty thickly peopled.

With this view a road has been constructed to avoid the rapids, and a railway is now projected. Numerous European stations have been set up at various points along the course of the river, and steamers have been launched, which ply regularly between Stanley Pool and Stanley Falls. Finally, in 1885, a treaty was concluded between the chief European Powers, by which free trade was established throughout a large portion of Central Africa, including the Congo basin, and a portion of that basin, amounting to about ten times the size of Great Britain, was set apart to form the Congo Free State, the management of which is entrusted to the International African Association. At the same time it was provided that special measures should be taken against the slave-trade, the curse of the region. The trade of the region, at present small, is in the same articles as in the rest of Western Africa.

[1] A pod-fruit like the pea or bean, but having this peculiarity, that it buries its pods underground to ripen ; hence the name.

[2] Used for soap-making, greasing the axles of railway carriages, &c.

[3] See p. 264 *n.* 5, and 304 *n.* 2.

[4] The trade is largely carried on by barter, in which glass beads have a high value with the natives. A kind of shells called *cowries* circulate as money.

6. PORTUGUESE LOWER GUINEA, from the Congo to 80° S., a little beyond the river Cunene. In the north the left bank of the Congo belongs to Portugal for ninety miles up, and Portuguese territory extends about 300 miles inland to the Kwango, a southern tributary of the Congo. Here, as in most parts of Africa, there is a comparatively rapid rise from the coast to the interior, and next the coast there is an arid and nearly desert tract, which increases in width towards the south from about five to about 100 miles. At a distance of about 100 miles from the coast lie some of the richest and healthiest regions of West Africa, at an elevation of several thousand feet above the sea level.

On these higher parts **coffee** is an important product. The oil-palm is met with only in the north of the region, but **india-rubber** is abundantly obtained from the same liana as in the rest of West Africa, and **cotton** and **sugar** are grown for export. The number of whites among the population is only about 12,000, some hundreds of whom are Portuguese convicts. The chief seat of the Portuguese government is **Loanda** on the coast.

The coast regions of Portuguese territory become more and more arid as we advance southwards, no rivers in that region flowing all the year round to the sea, so that the population consists only of a few hunting and pastoral tribes. The British have founded a whaling station on this coast at **Walvisch**[1] **Bay**, about 1° N. of the tropic of Capricorn; but all the rest of the coast is now claimed by Germany, and a German station has been founded at **Angra Pequena**, a few degrees north of Walvisch Bay.

7. BRITISH SOUTH AFRICA.—The British possessions in South Africa, including the protectorate of Bechuana Land, now embrace an area of upwards of 400,000 square miles, or between four and five times that of Great Britain.

Cape Colony, south of the Orange River, but now including also Griqua Land West, north of that river, has an area considerably more than twice that of Great Britain. In the southern and more populous part of the colony the rise from the coast to the interior takes place in well-marked terraces, the edges of which, facing seawards, present the appearance of mountains on the outside. The innermost terrace is bounded on the south by a true mountain range with peaks of from 5,000 to 6,000 feet in height, but the table-lands on either side are 3,000 feet in height or more. These table-lands are called **karroos**, and that which lies to the south of the mountain range just mentioned is in most parts at least seventy miles in breadth and is known as the **Great Karroo.** The general slope of the karroos is towards the interior, but outside of the inner mountain range the rivers nevertheless all flow directly seawards, and break through the edges of the table-lands in deep gorges (*kloofs*).

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[1] Dutch = Whale-fish. See p. 274 *n.* 1.

The **climate** is warmer, yet not much warmer, than that of England. The rains in the west are chiefly brought by the winter winds from the north-west, but are small in amount. The summer rains of the south-east, on the other hand, are brought by south-east winds (trade winds), and are copious on the mountain slopes; but the whole of the interior is extremely dry, and hence large tanks for water are a prime necessary in inland settlements. The karroos, which afford excellent pasture in the rainy season, are hard[1] and burnt up for the greater part of the year. The **Orange River**, though longer than the Rhine, is on account of this inland drought a small stream navigable only for boats, and even for these only a few miles up.

With such a climate Cape Colony as a whole is more suited for the rearing of live stock than for agriculture. **Sheep-rearing** is in fact by far the most important industry of the colony, and wool (including the hair of the Angora goat[2]) forms about a half of the total value of the exports (not including diamonds). The rearing of **ostriches** is now likewise largely carried on. Besides the ordinary cereals, all kinds of fruit belonging to temperate and warm climates are grown, and the vine, introduced at the close of the seventeenth century by a small body of French Huguenots, is cultivated with moderate success. The principal minerals are copper in the north-west, coal and iron in the south-east, and (much more important than either of these) **diamonds** in the arid plains of Griqua Land West (first discovered there in 1867).

Railways have been introduced both in the east and west, and the main lines, after being carried through notches in the karroos and the inner mountain range, meet in the interior, and a single line is then continued as far as Kimberley, the centre of the diamond-bearing district.

About two-thirds of the people of the colony (numbering in all less than 1,000,000) belong to native races, the chief of which is that of the **Kaffirs**,[3] a very dark-coloured race, which under British rule is increasing rapidly, and showing great capacity for a settled civilised life. The arid regions of the north-west are thinly inhabited, chiefly by **Hottentots and Bushmen**, degraded and dwindling tribes, living either as nomadic stock-rearers or as hunters (the Bushmen solely as hunters). The inhabitants of European origin are mainly of **Dutch and British** descent. The Dutch element was introduced in the middle of the seventeenth century, when South Africa was first colonised by that people,[1] and prevails along with the Dutch language in many inland parts in the west. The colony was acquired by the British in 1806, and since then the British element has been rapidly increasing, and the English language (that of legislation and commerce) is gradually spreading over the whole colony. Education is well provided for, and a university exists at **Cape Town**, the capital, which lies under the shelter of a flat-topped mountain, called **Table Mountain**, on a bay on the west coast in the south of the colony. **Port Elizabeth**, on Algoa Bay, is the chief seaport, and **Grahamstown** the chief town in the east.

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[1] Karroo is a Hottentot word signifying 'hard.'

[2] See p. 228.

[3] Kaffir is not a native, but an Arabic name, meaning 'infidel'—that is, heathen or non-Mohammedan.

East of Cape Colony proper lies **British Kaffraria**, sometimes known generally as the Transkei, from the fact that since 1846 the Great Kei river has formed the boundary between Cape Colony proper and this dependency, in which British authority is represented by magistrates appointed by the Cape Government. British Kaffraria is separated from Basuto Land by the **Drakenberg Mountains**, the highest range in South Africa, is fertile and well-watered, and is inhabited by Kaffirs engaged in the growing of maize (locally called mealies) and the rearing of cattle. **Basuto Land**, now a British Crown colony, also inhabited chiefly by native races, is a fertile and healthy plateau, cooler than Kaffraria in consequence of its greater elevation. It is the best grain-producing country in South Africa. **Bechuana Land** (taken under the direct protection of the British crown early in 1885 in order to resist the encroachments of the inhabitants of the Transvaal) is a vast territory half as large again as Great Britain, bounded on the west by the meridian of 20° E., and on the north by the parallel of 22° S. The west is chiefly occupied by the Kalahari Desert, but the east is inhabited by the Bechuanas, another African race of cattle-rearers and maize-growers, and is said to contain many tracts suitable for settlement by Europeans. The town of **Shoshong**, in the north (a little to the north of the tropic of Capricorn), is a centre of inland trade.

Natal, north of Kaffraria, a British colony rather more than one-fifth of the size of Great Britain, with a population of less than half a million, the great majority being Zulus and other Kaffirs. It grows **sugar** and other sub-tropical products upon a low strip next the coast, cereals higher up, and the mountain slopes are clothed with dense forests. Sheep, cattle, and ostriches are reared. Capital, **Pietermaritzburg**, in the interior; seaport, **Durban.**

8. EAST AND SOUTH-EAST AFRICA, comprising the whole region between the British colonies and the Red Sea.

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[1] Hence the Dutch names of physical features.

Immediately to the north of the British colonies are situated two republics founded by Dutch settlers (Boers[1]) at the Cape, who became discontented with British rule. These are the **Orange River Free State**, between the Orange River and the Vaal, and the **Transvaal**, between the Vaal and the Limpopo. The colonists are chiefly hunters and cattle-rearers. A third Boer republic has recently (1884) been founded in Zululand, north of Natal, under the title of the **New Republic.** **St. Lucia Bay**, on the coast, is claimed by the British.

From Delagoa Bay northwards the whole coast opposite the island of Madagascar belongs to the **Portuguese**, who, however, have done very little for the promotion of civilisation in the interior. The chief efforts in that direction have been due to English **missionaries**, who have launched steamers on Lakes Nyassa and Tanganyika, made a road connecting these lakes with each other and with the part of the Shire which is continuously navigable for steamers, and founded stations at various points along this route. The chief centres of Portuguese influence are **Sofala** and **Mozambique.**

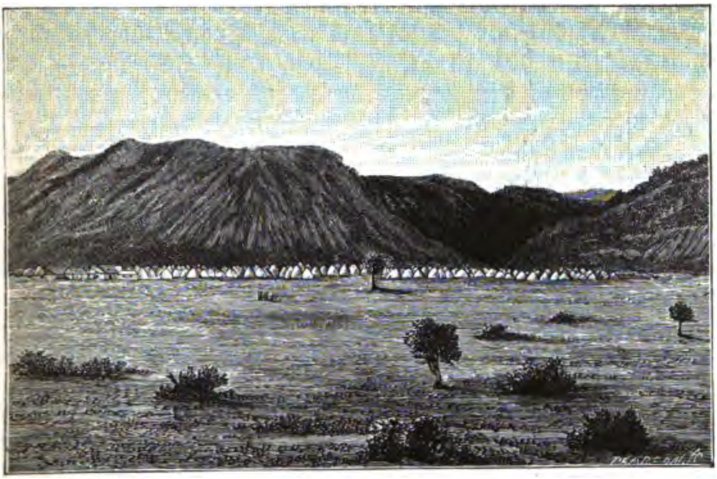

FIG. 49.—SHOSHONG, BECHUANA LAND, SHOWING THE ABRUPTNESS WITH WHICH MOUNTAINS RISE FROM LEVEL PLAINS IN ARID REGIONS.
(By the kind permission of Mr. C. G. Oates.)

North of Cape Delgado, Arab influence prevails, and an Arab Sultan reigns on the island of **Zanzibar**, his capital, which has the same name, being a town of about 100,000 inhabitants. This is the centre of Arab trade (formerly of the slave-trade) with the interior, a trade which was very early developed owing to the fact that the winter monsoon or trade-wind favoured the voyage from Arabia, the summer monsoon the return voyage. It is now also the starting-point of numerous exploring expeditions into the interior. **Behind Zanzibar**, in the interior, a mountainous, well-watered, and comparatively healthy territory about the size of Natal has been declared to be **under German protection**, and a German Company known as the East African Company seems likely to supplant the Arab influence along the whole coast from Cape Guardafui to Cape Delgado, having concluded numerous treaties with native tribes in that region.

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[1] A Dutch word meaning 'peasants.'

Throughout the portion of East Africa just described from the Zambezi northwards, merchandise must be carried by human porters, beasts of burden being killed either by the climate, or, in some places, by the tsetse fly, whose bite is fatal to horses and cattle. Farther north, in the drier **Somali Land**, which occupies the eastern angle of Africa, the camel can be used. The centre of the caravan trade in this region is **Harrar**, the Timbuktu of East Africa.

Abyssinia is a country about one-half larger than Great Britain, composed of an assemblage of more or less isolated plateaux difficult of access, and often bounded by precipitous sides. The plateaux are all high enough to be supplied with abundant rain (chiefly in summer[1]), but, as they differ in elevation, some are clothed with tropical forests while others are too high to grow any grain but oats and barley. The inhabitants, a dark-coloured Semitic race, received Christianity at an early date, and have ever since retained at least the forms of that worship. At present the country is under one rule, but the character of the surface renders it difficult to maintain a single rule throughout the area, and the country has consequently been broken up at times into several states.

East of Abyssinia, several points on the Red Sea and the Gulf of Aden are in the hands of European Powers—Britain (Berbera), France (Obock), Italy (Assab).

9. AFRICAN ISLANDS.—(*a*) **In the Atlantic Ocean.** Almost all these islands are of volcanic origin, and most of them were uninhabited when discovered by Europeans. They all now belong to European Powers.

The **Azores**,[2] usually considered as African islands, although by the Portuguese, to whom they belong, they are treated as a part of the kingdom of Portugal. The climate is healthy, and the islands are now covered with orange groves.

Madeira,[3] also Portuguese, a favourite resort for invalids requiring a mild climate; noted also for its wine. The chief town is **Funchal**, a calling station for Atlantic steamers.

The **Canary Islands** belonging to Spain. On the largest island is an active volcano upwards of 12,000 feet high known as the Peak of Teneriffe. Wine and cochineal are now the principal products.

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[1] See Introd. pp. 42 and 51 (*b*). [2] From the Portuguese word for 'a hawk.'

[3] Portuguese = wood; from the forests that covered the island at the time of its discovery, but which were soon after for the most part destroyed by a conflagration.

The **Cape Verde Islands**, belonging to Portugal. The island of St. Vincent, though arid and unfruitful, has a magnificent harbour, on which account it is often used as a calling station by Atlantic steamers.

The four **Guinea Islands** (in the angle between Upper and Lower Guinea) produce sugar, cacao, quinine, and other products. **Fernando Po** and **Annobon**, respectively the northernmost and southernmost, belong to Spain; the two middle ones, **Principe** and **St. Thomas**, to Portugal.

The three islands of **Ascension**, **St. Helena**, and **Tristan da Cunha** belong to Britain. Ascension is used as a store depôt and a sanatorium for the British West African squadron. It is celebrated for its turtles. St. Helena has a fine natural harbour, and is hence another place of call used by Atlantic steamers, On this island Napoleon was confined after the battle of Waterloo till his death in 1821.

(*b*) **In the Indian Ocean.** **Madagascar**, an island more than two and a half times the size of Great Britain. It has a mountainous core rising to nearly 9,000 feet in height and enclosed by plains traversed by lower mountains. A belt of dense forests surrounds the inner core. Rain falls most abundantly on the east coast, where accordingly the vegetation is most luxuriant, but where the climate of the plains is fatal to Europeans. In the south-west are steppes similar to those of Inner Africa, but without any of the antelopes and other large mammals of that continent—a proof that the island must have been separated from the mainland from a comparatively remote geological period.[1]

Rice and **manioc**[2] are the principal food-products. The ruling tribe is that of the **Hovas**, who belong to the Malay family, and accordingly have immigrated from Southern Asia. The earlier inhabitants, belonging to African races, are chiefly found in the outer parts of the island. The whole island is now under French protection. The capital of the country is **Antananarivo**, in the interior highlands.

Between the north of Madagascar and the mainland are the volcanic **Comoro Islands**, among which Mayotte belongs to the French; and east of Madagascar are other two important volcanic islands, **Mauritius** and **Bourbon**, the former belonging to Britain, the latter to France.

Both are important for the production of **sugar**, and, in respect of the quantity produced, Mauritius has no rivals among the British possessions except British Guiana. The labourers of this densely populated island are entirely Indian coolies.[3] Among the dependencies of the Mauritius are the **Seychelle Islands**, farther north, celebrated for its double coco-nuts.[4]

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[1] Comp. p. 72.

[2] See p. 304.

[3] See p. 244.

[4] The fruit of a palm-tree, the largest fruit in the world. It resembles two coco-nuts joined together. The tree from which it is derived is one of the loftiest and most graceful of the palm-tribe, sometimes attaining a height of nearly two hundred feet.

AMERICA.

AMERICA, or the New World, is less than half of the aggregate size of the three great continents of the Old World, Europe, Asia, and Africa, and the smaller size is due to the comparative narrowness from east to west. The length of the mainland of America from north to south is much greater than the corresponding dimension of the Old World; for, though the most northerly point of the mainland of North America (in latitude 72°) is 6° farther south than the corresponding point of Asia, the most southerly point (in 54° S., two degrees north of the island Cape Horn) is 19° farther south than the southernmost point of Africa, 15° farther south than the southernmost point of Australia.

The **original natives** of the continent, known as Indians,[1] are believed to be all of one stock. They now form only about a fourth of the entire population, and are most numerous in the south. The whole population is estimated at about 100 millions, or considerably less than a third of that of Europe, which has an area only one-fourth as great, and America has no considerable extent of territory with a population comparable in density to Europe, China, or India in the Old World,[2] even though there are large tracts fitted by nature for the maintenance of a dense population. The explanation of this contrast is to be found in the history of the continent. Compared with the Old World, America, **before its discovery by Europeans** at the close of the fifteenth century, was **very poorly furnished with** the **cultivated plants** and **domestic animals** that favour the growth of civilisation. America had only one kind of cultivated grain, **maize,**[3] to take the place of wheat, oats, rice, and other grains of the Old World; and, what is even more serious, it had no animal that could be used for the labours of the field,[1] no animal except the reindeer of the far north yielding milk, and North America had not even any beast of burden. Hence civilisation was little developed among the natives, and indeed only two important civilised nations existed before the advent of Europeans, one on the table-land of Mexico, and the other on that of Peru.

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[1] A misnomer due to the fact that when America was discovered by Columbus the discoverer believed not that he had touched on a new continent, but that he had sailed round the world and come to the East Indies.

[2] At the census of 1880 not one of the United States of America had a population of as much as 250 to the square mile.

[3] Hence the name *Indian corn*, by which it is sometimes known.

NORTH AMERICA.

Approximate latitudes: Quebec (Nantes), 47° N.; St. Paul, Montreal (Bordeaux), 45°; (Hakodate), New York (Naples, Constantinople, Tashkent), 41°; (Niigata), San Francisco (Palermo, Athens), 38°; (Kioto) Memphis, 35°; (Hangchau), New Orleans (Cairo, Lhassa), 30°; (Canton) Havana, 23°; Mexico (Bombay), 21°.
Approximate longitudes of mainland, 56°-168° W.

This continent corresponds to Europe and Asia, or Eurasia, in the Old World, and extends as far south as the southernmost point of India. The resemblance even includes the possession by both of a large archipelago in the south-east, but in the case of North America this archipelago reaches no farther south than the mainland. As regards the configuration of the surface,[2] the two agree in having a vast plain traversed by great rivers sloping to the north, but they differ in the arrangement of their great mountain chains and table-lands. Instead of east and west, the principal mountains of North America run more or less north and south. The great system is that of the **Rocky Mountains**, which stretch through the entire length of the western part of the continent, rising from a table-land which at its widest (between the **Sierra Nevada** and **Cascade Mountains** in the west and the main chains of the Rocky Mountains in the east) extends over one-third of the breadth of the United States. In this part the Rocky Mountains are composed of numerous short parallel chains, leaving openings between their extremities. The highest summits here reach the height of the higher Alpine peaks of Europe. Still higher peaks are found in the extreme north-west. Active volcanoes occur only in the north-west (Alaska) and in the south (Mexico and Central America).

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[1] Hence no proper plough could be used. The instrument which was used for a plough by the ancient Peruvians (see p. 307) is described as 'a strong, sharp-pointed stake, traversed by a horizontal piece ten or twelve inches from the point, on which the ploughman might set his foot and force it into the ground. Six or eight strong men were attached by ropes to the stake, and dragged it forcibly along, pulling together, and keeping time as they moved by chanting their national songs, in which they were accompanied by the women, who followed in their train to break up the sods with their rakes.'—PRESCOTT, *Conquest of Peru.*

[2] See section across North America, p. 63.

The only other great mountain system of North America is that of the **Appalachian**, or Alleghany Mountains, which extend in long parallel chains in the same general direction as the Atlantic coast.

A chain of magnificent lakes (**Lakes Superior, Michigan, Huron, Erie, Ontario**) lying between the two great mountain systems is drained by the St. Lawrence into the Atlantic.

Lake Superior is the largest body of fresh water in the world, its area about 1,000 square miles greater than that of Scotland with its adjacent islands, its length (rather more than 350 miles) almost exactly the same as that of a line drawn from Berwick-on-Tweed due south to the coast of England. Farther north are numerous lakes, large and small, often very irregular in outline, presenting a marked correspondence to the lakes of Finland. Of the larger of these lakes, however (**Great Bear Lake, Great Slave Lake, Athabasca, Winnipeg**), even the smallest greatly exceeds in size the largest of those of Finland.

The great **rivers** of the plain are of the highest importance as waterways,[1] and the minor rivers of the east are likewise of great service to internal communication, inasmuch as their valleys intersect the chains of the Appalachians, and so form a number of gaps, which have facilitated the laying of roads and railways across these mountains, as the openings between the minor chains of the Rocky Mountains have facilitated their construction right across the continent.[2]

In accordance with the general correspondence between North America and Eurasia, the **climate** of the west of the former continent answers to that of Western Europe, that of the east to that of Eastern Asia; but the climate of the east of North America is not so severe as that of Eastern Asia, while, in consequence of the superior warming effect of the Gulf Stream Drift as compared with the Kuro Siwo Drift, the west coast is not so mild as in corresponding latitudes of Europe.[3] Hence the most populous (warm temperate) regions of the east in America

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[1] See pp. 284-5, 287-8.

[2] The first Pacific Railway—that is, the first railway crossing the broader part of the American continent—was completed on May 10, 1869.

[3] See Introd. p. 47.

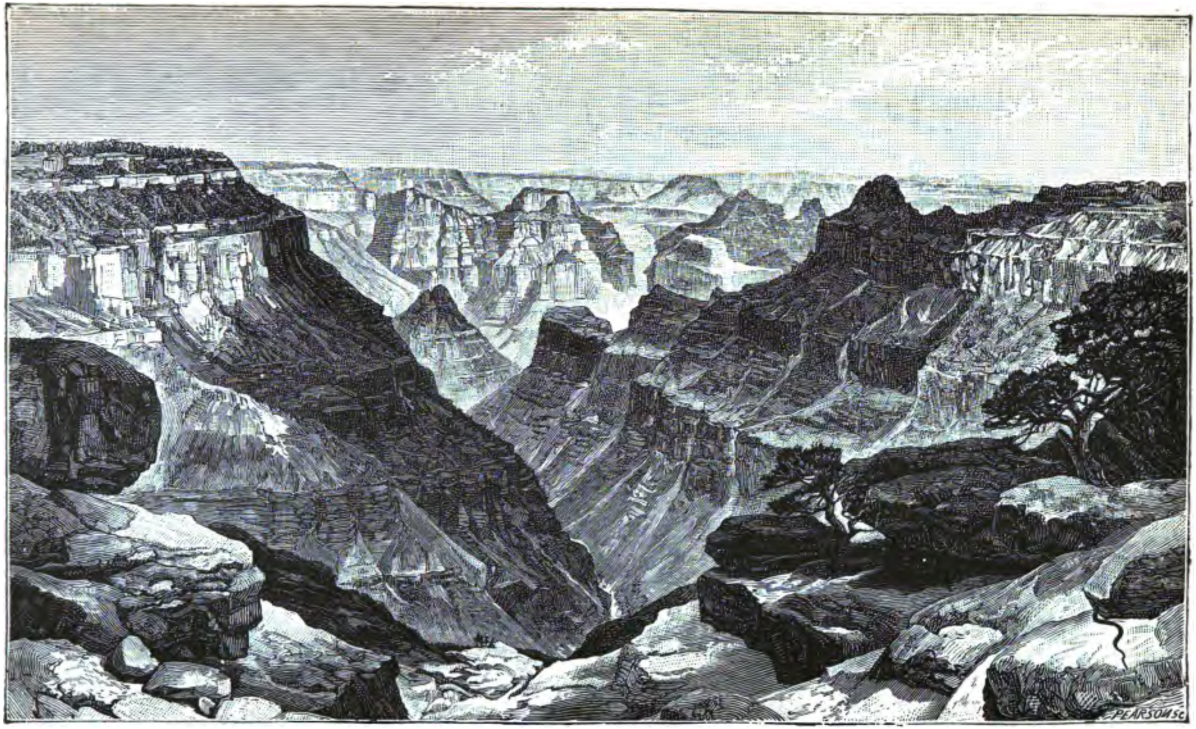

FIG. 50.—SCENE IN THE CAÑON REGION OF THE UNITED STATES. See p. 293.

are somewhat farther north than the corresponding regions of Eastern Asia, those of the west of North America somewhat farther south than the corresponding regions of Europe.[1]

Important differences in climate are due to the direction of the mountain chains. The Rocky Mountains, shutting off the moisture from the Pacific, cause a large part of the interior of the north of the United States to be too dry for agriculture without irrigation, and the open plain between these mountains and the Appalachians allows even the most southerly points of the United States, as well as the east coast of Mexico, to be swept from time to time, like Southern Russia, by icy winds from the north,[2] so that ice forms at the mouth of the Mississippi, in lat. 30° N.; and even in the extreme south of Texas (lat. 26° N., about the same latitude as that of Patna, in Bengal), as much as nine degrees of frost has sometimes been experienced.

The dry plains of the interior, the **prairies**, are almost treeless except near the river banks. In some parts, however, the true prairies, there is an abundance of rich grasses, which still afford food to vast herds of the **American bison**,[3] the so-called buffalo, though these herds are being rapidly reduced. The still drier parts of the plains are the home of another misnamed animal, the burrowing **prairie-dog**,[4] and where it haunts the scene, thick-stemmed, fantastic-looking, leafless but bright-flowered **cactuses**,[5] resembling the African euphorbias, generally form the most conspicuous vegetation. In these drier regions clouds of **locusts** and other noxious insects not infrequently commit their ravages, and now and then their devastations extend even into the regions of cultivated fields.

COUNTRIES OF NORTH AMERICA.

1. GREENLAND AND THE ARCTIC ARCHIPELAGO.— Greenland is a large mass of land or group of islands (it is uncertain which), almost completely buried under ice, which reaches in some parts to at least ten thousand feet above sea-level, and which in the numerous fiords [1] of the coast has its ends broken off to form icebergs.[2] The east and south coasts are difficult of approach on account of the pack-ice by which they are constantly fringed, and the only settlements therefore are upon the west coast. These belong to the Danes.

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[1] Note the latitudes mentioned at the head of this section.

[2] Called in the United States, 'Northers'; in Mexico, 'Nortes.' Comp. p. 52 (3) (*a*).

[3] See p. 227.

[4] This small creature, though it barks like a dog, is more like a squirrel, though without the bushy tail. In some places the prairies are all honeycombed with its burrows, and dotted over with the little mounds which it builds, and on which it is in the habit of sitting erect on the watch like an Alpine marmot.

[5] See cut, p. 68.

The inhabitants are mostly **Eskimo**, who, though they can grow a little barley and a few vegetables and potatoes, live, like their unsettled kinsmen of the more northerly parts of Greenland, and on the north coasts of the mainland of America, chiefly by seal and whale fishing, pursuing these animals in peculiar boats called *kayaks.* Between Greenland and the Arctic Archipelago lies **Baffin's Bay**, with **Smith Sound** and its continuations, by means of which the nearest approach has yet been made to the North Pole.[3] Only one or two of the islands of the Archipelago are inhabited (by Eskimo). Between them a **North-west passage** to Eastern Asia was sought for centuries in vain, and, though discovered by M'Clure in 1853, it is too encumbered by ice to be of any use for commerce.

2. BRITISH AMERICA.—A. The Dominion of Canada, north of the United States, from which it is separated partly by the middle line of the four northern great lakes, partly (west of the Lake of the Woods) by the parallel of 49° N. It embraces a territory upwards of three millions of square miles in extent, but the populous portion of this vast area is confined to the region south of the St. Lawrence, together with the land on the north adjacent to that river and to the great lakes from Quebec to lat. 42° N.

The lake peninsula which lies between Lake Huron (with the Georgian Bay) on the one side, and Lakes Erie and Ontario on the other, and ends at the latitude just mentioned, has an area of less than 20,000 square miles, and yet, at the last census, contained about two-sevenths of the entire population of the Dominion, even though it had not a single town with 20,000 inhabitants.[4] The whole of the populous area lies at least two degrees further south than the southernmost point of England, but from two to six degrees further north than Manchuria, which may be considered the corresponding region of Asia.

The **surface** is generally low-lying east of the Rocky Mountains, and **toundras** similar to those of northern Russia and Siberia cover large tracts in the north, descending in the east to the southern shores of Hudson's Bay, and still farther east along the whole coast of Labrador. There next follows a region of vast **forests**, chiefly of pines and firs, amongst which the principal products in the north-west are, as in the corresponding latitudes of Russia and Siberia, **furs**; and in the south-east, timber, or, as it is called in America, **lumber**, which is floated in immense quantities down the smaller streams to the larger ones, the Ottawa and St. Lawrence, and by these to Quebec, whence it is exported to Europe and elsewhere.

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[1] See p. 188.

[2] See Introd. p. 54–5.

[3] By the British expedition under Nares in 1876, 83° 20′ N.; by the United States expedition under Greely in 1883, 83° 24′ N.

[4] Nevertheless, the density of population in this peninsula was only about 65 to the square mile—less than that in any county of England or Wales except Radnor.

South of the forest region there lies in the west, between the Rocky Mountains and the Great Lakes, an area of level plains or gently rising table-lands almost destitute of trees—the commencement of the American prairies. These plains contain tracts of the highest importance for the future development of the Canadian Dominion. Though part of this area is covered with a barren soil which forbids all hope of cultivation (at least for many years to come), there are still larger areas, chiefly along the **Red River** (which enters Lake Winnipeg from the south) round **Lakes Winnipeg** and **Manitoba**, and in the valley of the **Saskatchewan**, where the soil is of the richest description, and the climate, though very different from that of England, is admirably adapted for agriculture. Two feet of snow may cover the ground from December to March, but the warm summers are sufficient to ripen wheat in three or four months.

The average number of bushels of wheat to the acre grown on these rich soils with very little manure is about twenty-eight, or only about one bushel less than in England, and higher than in any other country for which statistical information is obtainable. **Coal** also is among the products of this region and is already worked at more than one place.

For the development of this region, so remote from the markets of Europe, the natural **waterways** of the Dominion are of the highest importance. From the mouth of the St. Lawrence, it is possible for ships to ascend, with the aid of a few canals, to the head of Lake Superior, and thence with little interruption the journey by water may be continued by **Rainy Lake and River**, and **Winnipeg Lake and River**, to the head waters of the Saskatchewan, a distance of 4,500 miles in all. One of the interruptions to navigation (avoided by a canal) on this system of water-ways is formed by the **Falls of Niagara**, at which a river more than half a mile wide, forming the connection between

Lakes Erie and Ontario, is precipitated over a cliff upwards of 150 feet in height. Railways have been laid in the intervals where water communication does not exist, and the completion of the Canadian Pacific Railway[1] is sure to have an important effect on the prosperity of this region. The northern rivers of Canada, the **Mackenzie, Peace,** and **Athabasca,** and **Great Fish River,** have their course interrupted by too many rapids and falls to be of much use as waterways, but this is of less consequence since they empty themselves into a scarcely accessible sea. It is a more serious disadvantage that the **Nelson River**, the outlet of Lake Winnipeg to Hudson's Bay, has its navigation interrupted in the same way (except for 100 miles above its mouth), for the navigation of that wide inlet, though difficult, is believed to be practicable, and this route is the shortest from Liverpool to the Canadian north-west. The construction of a railway to follow the course of the Nelson river has accordingly been commenced.

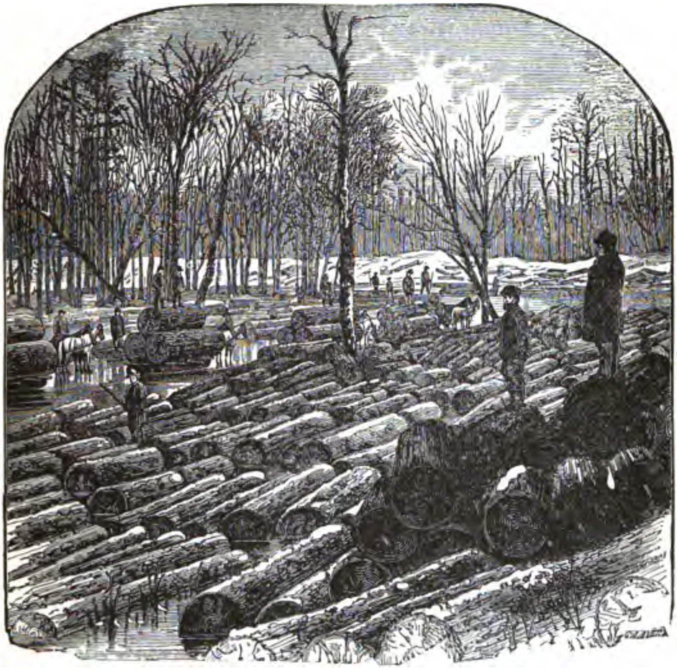

FIG. 51.—A 'LUMBERING' SCENE, CANADA.

The **people** of Canada are **mainly of British origin** and Protestant in religion; but French Roman Catholics make up about one-third of the population, chiefly in the east (Quebec, &c.), those regions having been originally colonised by the French, from whom they were gained by the English in 1759. There are about 100,000 **Indians**, most of whom are hunters roaming over the forest regions of the north-west, and living by the sale of furs to the fur-trading companies. With the view of encouraging emigration, and promoting the development of the fertile areas in the west, the government of the Canadian Dominion gives a free grant of 160 acres of land to settlers who undertake to reside on the land and prepare it for cultivation.

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[1] The Canadian Pacific Railway was completed in November, 1885.

The Dominion, though having a general government and parliament for the common affairs, is divided into a number of provinces, each of which has a parliament of its own, to deal with matters of local interest, but there is a large territory on both sides of Hudson's Bay which is not so organised. The seat of the general government is **Ottawa**, a small town on the river of the same name, about thirty miles above its confluence with the St. Lawrence.

Provinces and Towns.—(1) **Nova Scotia** (in the time of the French Acadie), a province including both the peninsula of that name and the island of **Cape Breton**, in the north: in all about two-thirds of the size of Scotland. It is rich in **coal**, and has extensive fisheries. Capital, **Halifax**, on the east coast.

(2) **Prince Edward Island**, about the size of the county of Norfolk, in the bay between New Brunswick and Nova Scotia, south of the Gulf of St. Lawrence.

(3) **New Brunswick**, rather less than Scotland, rich in forests and minerals (coal and iron), and with valuable fisheries, and extensive ship-building. Capital, **Fredericton**, in the interior; largest town, **St. John's**, on the Bay of Fundy.

(4) **Quebec**, on both sides of the St. Lawrence, mostly east of the Ottawa, twice the size of Great Britain. The winter is very long, the sleighing season lasting five months. Capital, **Quebec**, originally on, now partly on and partly round. a commanding promontory at the junction of the Charles River and St. Lawrence; the head-quarters of French Canada.[1] **MONTREAL**, 150 miles higher up the St. Lawrence, at the head of the ocean navigation of that river, and the eastern end of the canal which avoids the rapids of the St. Lawrence;[2] a characteristically British town, rapidly growing in prosperity;[3] it is the chief seaport of the Dominion.

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[1] The capture of Quebec by General Wolfe in 1759 secured for the English the possession of French Canada.

[2] The St. Lawrence is here spanned by a railway bridge nearly two miles long (including abutments).

[3] Its population in 1881 was 141,000; in 1861, 90,000; while that of Quebec was in 1881 only 62,500, as against 60,000 in 1861.

(5) **Ontario**, rather larger than Great Britain, with a shorter winter than Quebec (sleighing season two months). It is remarkably rich in **petroleum**. Capital, **Toronto**, on Lake Ontario, another highly prosperous town,[1] about 300 miles above Montreal; at the west end of Lake Ontario, **Port Hamilton**; in the middle of one of the richest parts of the lake peninsula, **London**.

(6) **Manitoba**,[2] the rich agricultural province of the west; capital, **Winnipeg**, on the Red River, where it is joined by the Assiniboine.[3]

(7) **British Columbia**, four times the size of Great Britain, occupying the dry table-land of the Rocky Mountains, with the moist mild strip of coast, and the islands to the west. The principal wealth of the province consists in its minerals and forests. The discovery of **gold** first brought a rush of settlers here in 1856.[4] The forests on the western or Coast Range of the Rocky Mountains, consisting of gigantic pine and fir-trees, are among the finest in the world. Capital, **Victoria**, at the southern end of Vancouver's Island.

B. Newfoundland, a separate colony, to which also belongs the dreary and scarcely inhabited Atlantic coast of Labrador. The island is about one-fourth larger than Ireland. It may be called the Yezo of North America, though situated about six degrees farther north than that island.[5] Like Yezo, it is washed by a cold current on the east, which brings with it a great abundance of food-fishes,[6] and the inhabitants are chiefly fishermen, settled on the coast. The cod and seal fisheries on the bank of Newfoundland, a shallow to the east, are the largest in the world. They are carried on in summer and autumn. Capital, **St. John's**, on the east coast.

C. The Bermudas, a group of small islands about 750 miles south of Nova Scotia, producing tropical and temperate fruits, and frequented by invalids for the sake of their equable climate.

3. **UNITED STATES.**—The territory belonging to the United States comprises an area of three millions of square miles between Canada and Mexico, besides an area of nearly 600,000 square miles, forming the territory of Alaska, in the north-west of the continent.

A brief account of the surface is given in the general description of North America, and here it need only be added that almost the whole of the vast plain between the Rocky Mountains and the Appalachians is drained into the Gulf of Mexico by the Mississippi and its tributaries, all of which are of the highest importance as channels of commerce.

The **Mississippi** itself is navigable from St. Paul, in Minnesota; and all its great tributaries—the **Tennessee** and the **Ohio** on the left bank,

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[1] Population in 1881, 86,000; in 1861, 45,000.

[2] Population of province in 1881, 66,000; in 1871, 12,000.

[3] See Introd. p. 61 (2) (*a*). [4] Comp. California, p. 294, and Australia, p. 312.

[5] See above, p. 260 and p. 280–82. [6] See Introd. p. 49.

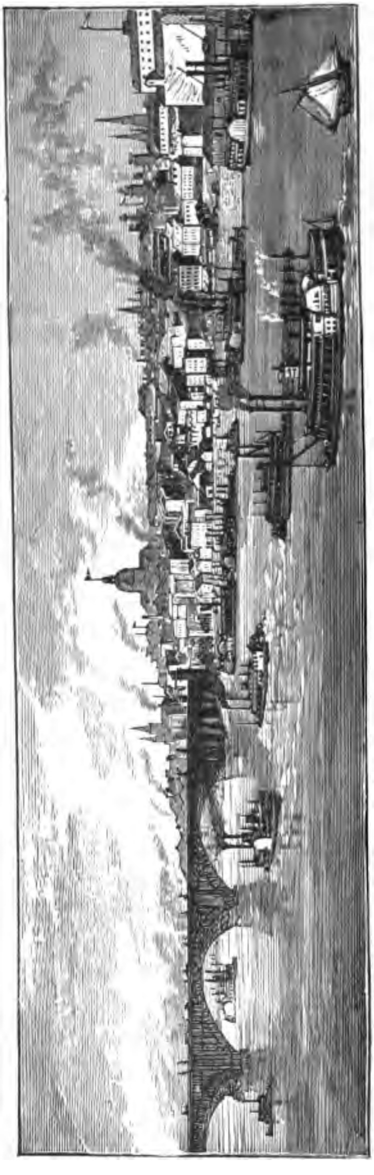

Fig. 52.—View of St. Louis with the Lowest Bridge on the Mississippi.

and the **Red River**, the **Arkansas**, and the **Missouri** on the right—are navigable for hundreds of miles (the Missouri for more than two thousand miles) above their confluence with the main stream. The rivers of the Atlantic coast, with the exception of the **Hudson**, are of less importance as navigable streams; but, nevertheless, are of great value to commerce, as forming, like the rivers of Britain, fine harbours in their estuaries.

The principal **products** of the United States are **food supplies and raw materials of manufacture** for the industrial populations of Europe, and above all of the United Kingdom. From one-half to two-thirds of the **wheat, flour, maize, raw cotton,** and live cattle, and nearly four-fifths of the meat imported into the United Kingdom, come from the United States.

Of the food grains, **maize** is the principal, being well adapted for the warm and dry, but not rainless, summers that characterise the greater part of the agricultural region. The amount of this crop grown is between three and four times more than the amount of wheat, but **wheat is the great export crop,** nearly one-third of the total quantity grown being sent on an average out of the country.

The **mineral wealth** of the United States is also enormous. **Coal, iron, petroleum, copper, quicksilver, and the precious metals,**[1] are all found in extraordinary abundance. The total area of the productive coal-fields of the United States is estimated at nearly 200,000 square miles, or from fifteen to twenty times as much as that of the European coal-fields. At present the production of coal is most abundant in Pennsylvania and along the west of the Appalachian Mountains from Ohio to Alabama.

The **government** of the United States is republican, the head of the state being an elected president, and the legislative body an elected parliament called the Congress. Each of the states, however, is a separate republic so far as its own local affairs are concerned, whence the term United States. Originally British Colonies, the communities constituting the nucleus of the present United States declared their independence in 1776, and ultimately formed thirteen original states.[2] Since then the territory has grown chiefly by conquests from France (Louisiana, &c.), Spain (California, Florida, &c.), and Mexico (Texas), and now consists of **thirty-eight states**, besides **ten territories**, which have not the same amount of local independence as the states.

In accordance with this origin the **people** are **mainly of British descent**, and the majority of immigrants are from the British Isles. About one-eighth of the people are **negroes**, originally introduced as slaves. The descendants of the **native Indians** are now few in number. Some are settled among the rest of the people, and pay taxes to the general government (civilised Indians), while others still live independent on allotments of land, the chief of which is the Indian territory north of Texas. Protestantism is the prevailing religion. **Education** is a matter left to the individual states, but is generally well provided for.

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[1] The production of gold and silver in the United States exceeds that of any other country in the world. Australia and Russia are its rivals in the production of gold, but in the production of silver it is without a rival, the production of Mexico (which comes next in this respect) being not much more than half that of the United States.

[2] The thirteen original states are four of the six New England States—New Hampshire, Massachusetts, Rhode Island, Connecticut—together with New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, North and South Carolina, Georgia. Of the two New England States which were not members of the original confederation, Maine was a part of Massachusetts till 1820, and Vermont was not admitted into the Confederation till 1791, two years after the adoption of the Constitution by the last of the thirteen original states.

With regard to its climate and productions, the territory of the United States may be divided into four regions, two east and two west of the meridian of 100° W.

A. The North-east.—North of the Ohio and Delaware Bay, comprising among others the New England States.[1]

In this region the inhabitants are almost all of European origin, and the products are similar to those of Europe. The eastern portion of it is the most densely peopled part of the United States, and that in which **manufacturing industries** are most highly developed, so that a large part of the agricultural population is migrating hence to the regions of the west, whither the surplus population of Europe is flocking. In the north **sugar**[2] is largely obtained from the sap of a species of maple.

Towns.—(a) On or near the Coast.—At the mouth of the Hudson, opposite the lower end of Long Island, **NEW YORK**, the largest town in the New World, containing with its suburbs of **BROOKLYN**[3] (on Long Island, also in the state of New York), and **JERSEY CITY** (New Jersey), on opposite sides of its harbour, a population of nearly two millions. As a seaport it ranks next after Liverpool and London. At the head of sea navigation on the Delaware, ninety miles south-west of New York, **PHILADELPHIA** (Pennsylvania; with suburbs 900) the second largest town in the United States; on Massachusetts Bay, 200 miles north-east of New York, **BOSTON** (Massachusetts; with suburbs 450), the centre of culture in the United States, its suburb Cambridge containing **Harvard College**, the oldest college in the United States, now forming the University of Cambridge; about twenty-five miles inland, **Lowell**, chief seat of American cotton manufactures, hence sometimes known as the 'American Manchester.'

(b) **On or near the Great Lakes.**—At the east end of Lake Erie, **BUFFALO** (New York), with a great lake, river, and canal trade in grain and timber; on the south side of the same lake, **Cleveland** (Ohio), with extensive iron and other works; **DETROIT**[4] (Michigan), opposite the extremity of the lake peninsula of Canada; **CHICAGO** (Illinois, 500), at the head of Lake Michigan, unrivalled for its trade in grain, animal products, and timber, and remarkable for its rapid rise, its site having been occupied in 1830 by only about a dozen families; **MILWAUKEE** (Wisconsin), on the west coast of the same lake, with a similar trade, to which the export of lead is added; it has a large German population.

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[1] See note 2, p. 289.

[2] In many parts of the United States a species of sorghum (a grain allied to the durrah of Africa) is grown for the sake of the sugar obtained from it; and sugar is also made from maize. Most of the sugar produced in the United States, however, is derived from the sugar cane. Sugar beet (see p. 109 *n.* 1) is scarcely grown at all.

[3] Now connected with New York by a bridge accommodating railway and other traffic.

[4] Originally a French town; hence the French name, meaning 'strait.'

(c) **On the Mississippi and its Tributaries.**—At the head of navigation the contiguous towns of **St. Paul** and **Minneapolis** (Minnesota), with numerous flour mills. A little below the confluence of the Mississippi and Missouri **ST. LOUIS** (Missouri, 350), another town remarkable for the rapidity of its rise, situated at the lowest point at which the Mississippi is bridged,[1] hence with an enormous trade, but also notable as the seat of an important iron industry and various other manufactures; at the point where the Alleghany and Monongahela unite to form the Ohio the contiguous towns of **PITTSBURG** and **Alleghany** (Pennsylvania), centre of a region yielding coal, iron, and petroleum in great abundance; near the most northerly point of the Ohio, **CINCINNATI** (Ohio; 300 with suburbs), formerly called popularly 'Porcopolis,' from its enormous trade in pork, which, however, is no longer confined to this town as it once was.

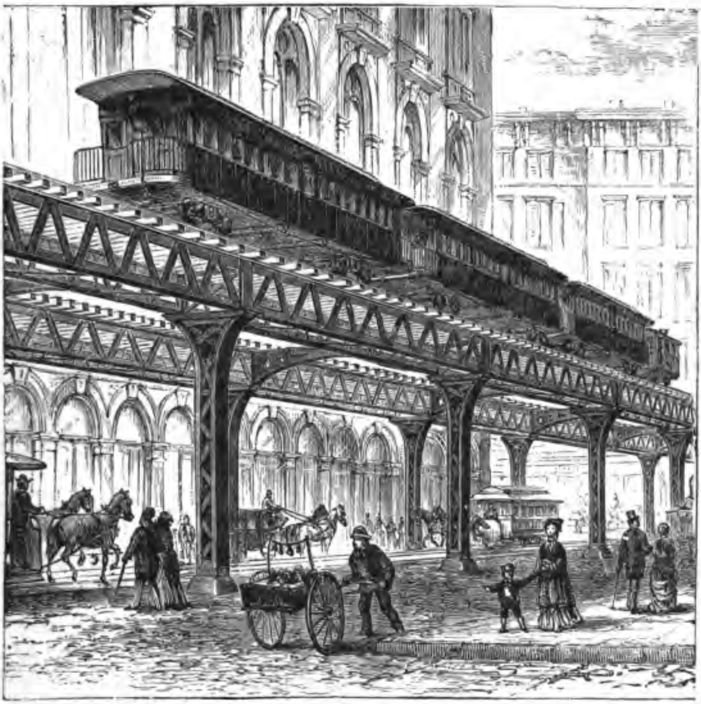
FIG. 53.—AN ELEVATED STREET RAILWAY, NEW YORK.

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[1] See Introd. p. 61 (2) (*b*) and (*c*).

B. **The south-east**, a region in which **tobacco** and **cotton** are grown as staples, and in which negroes form a large proportion of the population, in the states on both sides of the Lower Mississippi even outnumbering the people of European descent. The tobacco[1] district lies in the north (extending even into the region north of the Ohio), the cotton district in the south. Among other characteristic crops are **rice** in the swamps of Carolina, **sugar-cane**[2] in Louisiana, and **oranges** in Florida. The last state is also celebrated as a resort for invalids on account of its remarkably equable though moist climate. The rainfall of this region, at least in the south-east, is much heavier than to the north of the Ohio, and occurs mainly in summer; the prevailing winds having a monsoon character,[3] in summer from, in winter towards, the Gulf of Mexico.

Four towns in this region have a population exceeding 100,000. At the head of the fine inlet of Chesapeake Bay, **BALTIMORE** (Maryland, 330) with a large trade in tobacco and cotton; at the head of the extensive estuary of the Potomac, the next inlet to the south, **WASHINGTON**, the seat of Congress, in a small district called the District of Columbia, not belonging to any state; near the mouth of the Mississippi, **NEW ORLEANS** (Louisiana, 220), the chief cotton port in the United States; on the left or south bank of the Ohio, **LOUISVILLE** (Kentucky), centre of the tobacco trade. **Richmond** (Virginia), on the James River, **Charleston** (South Carolina), and **Savannah** (Georgia), all on the east coast, are important seaports, the first exporting chiefly tobacco, the other two cotton.

C. **The region between 100° and 120° W.** (mostly tableland, but partly low-lying prairie), comprising an area of about 1,200,000 square miles (about ten times as great as the British Isles), may be known as the **arid region of the United States**, inasmuch as throughout this whole area (except in the neighbourhood of mountains)[4] the rainfall is too scanty for agriculture without irrigation. The region is hence extremely thinly populated, containing on an average only about two persons for every three square miles, and, except in the mining districts, the white inhabitants are chiefly ranchmen—that is, employed in cattle-rearing on a great scale.

The principal **mines** in this region are of **silver**, in Colorado and

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[1] Tobacco is grown more or less in the great majority of the states.

[2] See p. 290 *n.* 2.

[3] See Introd. p. 42, and comp. pp. 226, 275.

[4] See Introd. p. 52 (3) (*a*).

Nevada. The **Comstock Lode**, near Virginia City, in the west of the latter state, is the richest silver mine in the world.

A large part of the region between the **Sierra Nevada** in the west and the **Wahsatch Mountains** in the east, is an area of inland drainage known as the **Great Basin**, near the east of which is the **Great Salt Lake** (Utah), at the height of 4,200 feet above sea-level. Adjoining this lake, the Mormons[1] have their settlement round **Salt Lake City.** Vast tracts of this region are absolutely desert, these being situated principally in the south-west on different sides of the Rio Colorado (**Mohave, Gila and Painted Deserts**). The last-mentioned desert takes its name from the extraordinary character of the scenery. There the rivers (Colorado and its tributaries) have their beds sunk in tremendous gorges with precipitous sides (**cañons**), such as are represented in the cut on p. 281; but the effect of the scenery there delineated is enhanced by the dazzling colouring of the rocks, on which 'we behold belts of fierce staring red, yellow, and toned white, which are intensified rather than alleviated by alternating bands of dark iron grey.' Farther north is another remarkable area known as the **Yellowstone Region**, in which tremendous geysers and numerous boiling springs are found along with cañons and 'painted' rocks. Amidst the deserts of the south-west, far from the present seats of civilisation, remains have been discovered proving that here, at some remote period, there must

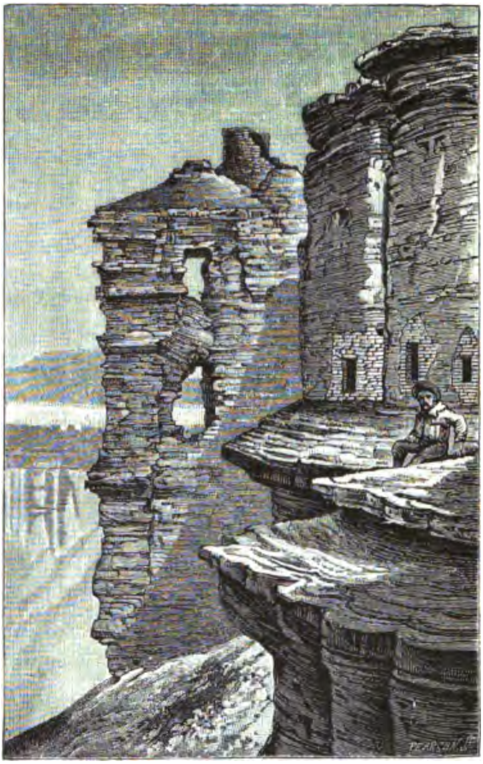

FIG. 54.—ABODES OF ANCIENT CLIFF-DWELLERS BELONGING TO THE ARID REGION, UNITED STATES.

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[1] A peculiar religious sect which sanctions polygamy.

have dwelt a pretty thick population, who had their abodes in caves on the cliffs, no doubt for security.

D. The Pacific Coast.—In this section of the United States the climate is like that of the Mediterranean region, the summer nearly rainless, the winter mild. Gold, which first attracted a large population to this part of the world, is still an important product; but the fine **Californian valley**, watered by the **Sacramento** in the north and the **San Joaquin** in the south, now teems with wheat, maize, wine, and southern fruits.

On the mountains, the **forest scenery** of this region is highly remarkable. Favoured by copious rains, the western slopes of the mountains are crowded with gigantic cone-bearing trees—firs and pines, besides two species of Sequoia,[1] the red-wood, and the mammoth tree, the latter of which is rivalled in height and girth only by some of the gum-trees or Eucalypti of Australia. An enormous **timber-trade** has grown up round the fine inlet of **Puget Sound** (Washington Territory), in the north of this region.

The only large town is **SAN FRANCISCO** (California, 240), on one of the finest natural harbours on the west coast of America. Among its population is a considerable proportion of Chinese, who exhibit here the same untiring industry as elsewhere, but who are regarded with great disfavour by the labouring population of the United States, chiefly on account of the low rate of wages for which they work.

Alaska is a thinly peopled territory producing chiefly furs. It is traversed by a magnificent river, the **Yukon**, which pours into the sea half as much water again as the Mississippi.

4. MEXICO, which lies to the south of the United States, between about 32° and 17° N., has a total area equal to between eight and nine times that of Great Britain; but the northern part forms a continuation of the arid and desert region of the United States.[2] The densest population is found on the portion to the south of the tropic of Cancer, and more particularly on a portion of the **plateau of Anahuac**, which lies at an elevation of 7,500 feet above sea-level. Here, on an area about equal to that of Great Britain, is settled at least two-fifths of the entire population.

This elevated table-land, surrounded by mountains, many of which are the cones of active or extinct volcanoes, forms what is called the **cold region** of Mexico, and **temperate** and **warm regions**

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[1] Sequoias, now confined to this region, were in a recent geological epoch very widespread, their remains having been found in Japan and Greenland as well as in England. The Mammoth Tree grows in a strip of forest two hundred miles in length, and towards the southern extremity the forest is composed entirely of this one tree.

[2] See p. 292-3.

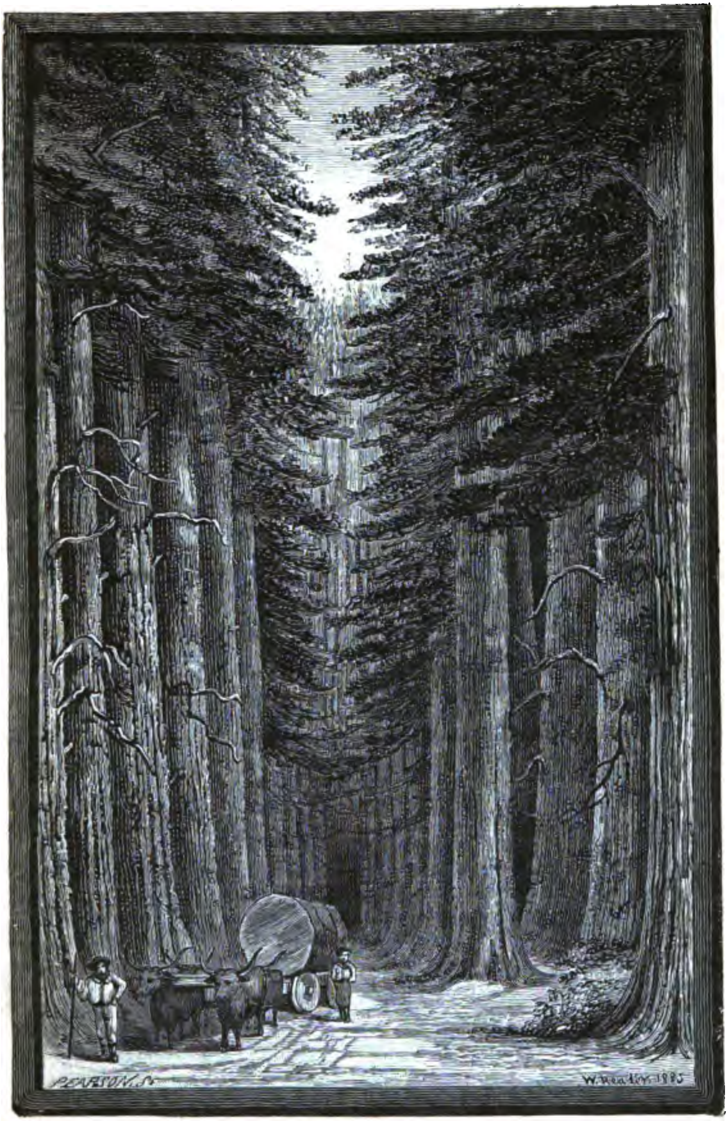

FIG. 55.—SCENE IN A FOREST OF GIANT CONIFERS ON THE SIERRA NEVADA, U.S.

are successively entered as one descends the outer slopes of the mountains that bound it. On the table-land there is a marked contrast between a rainy season (in our summer months) and a dry season throughout the rest of the year. But in the lower levels, with their tropical heat, rain falls from time to time, even in the dry season. Among the lowlands the outlying thinly populated peninsula of **Yucatan** has a dry climate almost at all times. On the table-lands the **products**, in consequence of the elevation, are not unlike those of Europe—**maize** (the principal food of the people) and even wheat and barley; but there is one product that has always formed a very marked feature of Mexican agriculture. This is the **agave** or American aloe, grown chiefly for its sap, which when fermented yields the favourite drink of the Mexican people, called **pulque**. In the lowlands are grown coffee and cacao, sugar, tobacco, vanilla. On the table-land irrigation is necessary, and the Spanish settlers have constructed great aqueducts similar to those which have existed in Spain since Roman times. **Silver** is found in great abundance in many places. (See p. 289 *n* 1.)

Railways are still few, but an important addition to the railway system has recently been made by the completion of the line across the northern desert connecting Mexico with the railways of the United States, and another important railway is now in progress across the Isthmus of Tehuantepec, where the Rocky Mountains become narrowed to a single chain little more than 4,000 feet in height.

Among the **people** the dominant race consists of Europeans of Spanish origin (**Creoles**), but these are greatly outnumbered by natives and mixed breeds (**Mestizoes**). Hundreds of years before the arrival of Europeans the plateau of Anahuac was the centre of powerful native empires—first, that of the **Toltecs**, then of the **Aztecs**—and monuments of both still remain scattered over Mexico and Central America. The empire of the Aztecs was overthrown by Cortez in 1521, and till the present century Mexico remained a Spanish dependency, but ultimately the people, following the example of the British colonists in North America, threw off the yoke of the mother country, and founded a federal republic (1824).

The only town with more than 100,000 inhabitants is **MEXICO** (250), on the Lake of Tezcuco, and three with more than 50,000, **Guadalajara**, **Guanajuato**, and **Puebla**, are all situated, like Mexico, on the table-land. **Vera Cruz**, on the Gulf of Mexico, is the chief seaport.

5. CENTRAL AMERICA.—The territory to the south of Mexico is chiefly divided among five small republics, **Guatemala, San Salvador, Honduras, Nicaragua,** and **Costa Rica,** the largest of which have an area little more than half that of Great Britain, while the population does not in any case exceed 1,500,000.

The general character of the surface is similar to that of Mexico, but the elevation is on the whole lower. The elements of the population are also much the same as in the latter state. The **products** are those of the tropical parts of Mexico, **coffee** being the chief, though **indigo, india-rubber,** and various **drugs,** are of importance. Valuable **timber** and **dyewoods** are obtained from the forests, and **Belize,** in British Honduras, the only place with a good harbour on the Atlantic coast, is a great place of export for **mahogany.** British Honduras is a crown colony, with an area equal to about that of the counties of York and Durham taken together, and a population of about 25,000. **Guatemala** is the largest town in Central America.

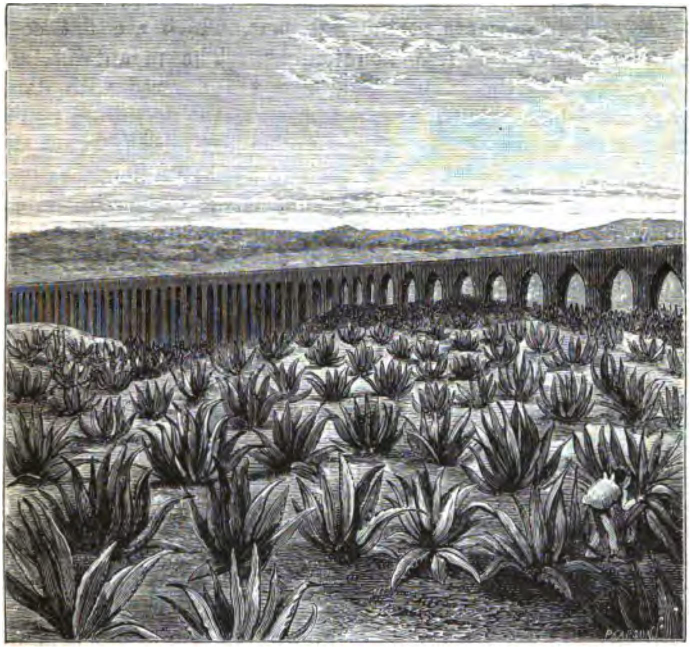

FIG. 56.—AN AGAVE PLANTATION, MEXICO.
(By the kind permission of Mr. Coles, Curator of the Map Department, Royal Geographical Society.)

6. **WEST INDIES**, a group of islands with a situation similar to that of the Eastern Archipelago, but differing from the latter in that they all lie to the north of the equator, and in having a much smaller aggregate area.

Their whole area is not much larger than that of Great Britain, or only about one-third of that of the island of Borneo. Their total population is about four millions, the two largest islands, Cuba and Hayti, being very thinly populated.

The group is divided into the **Greater Antilles** in the west, the **Lesser Antilles** in the east.

All the islands except the **Bahamas**, which are flat coral islands, are more or less mountainous. The mountains, and higher parts of the islands generally, are covered with dense woods, to which palms and tree-ferns give the prevailing aspect, though mahogany, ebony, and other valuable timber trees are also numerous. In accordance with their tropical situation, they have a dry alternating with a rainy season. The former occurs during our winter months, when the trade-wind blows strongly over the group; the latter during our summer, when the trade-wind moves farther north in consequence of the higher position of the sun. During the month of September, when the sea is at its hottest, the winds are very variable, and **hurricanes**[1] are then most frequent.

The **chief food of the people** is derived from the fleshy underground parts of three different plants, **manioc**,[2] **yams**, and **sweet potatoes**,[3] and the **chief plantation crops** (grown for export) are **sugar, coffee**, and **tobacco**. Mineral products are of little importance, and the only important product from the animal kingdom is sponges[4] obtained from the banks of the Bahamas.

The **population** is entirely descended from natives of other continents—Europe, Africa, and Asia. At the time of their discovery by Columbus[5] the West Indies were inhabited by a pretty dense population, principally gentle Arawaks and wild and warlike Caribs, but the natives were speedily exterminated through the barbarities of the invaders.[1] Hence the principal inhabitants besides Spaniards, on the islands of Cuba, Porto Rico, and Hayti, are the descendants of negroes, originally slaves, but now all free. Indian and Chinese coolies[2] have been introduced as labourers since the liberation of the negroes in consequence of the unwillingness of free negroes to work.

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[1] See Introd. p. 41.

[2] See p. 304.

[3] A plant allied to the convolvulus, and totally different from what is now called the potato. It was this plant, however, that was first known as the potato, that name being a corruption of a word of unknown origin (*batatas*) designating the sweet potato.

[4] Sponges consist of a horny skeleton of a kind of animal, the living part of which consists of a slimy substance investing the skeleton.

[5] The first land reached by Columbus in the New World was one of the Bahamas, probably San Salvador.

With the exception of Hayti all the islands now belong to European Powers; Spain still holding the largest area, Great Britain the next largest, while France, the Netherlands, and Denmark hold the remainder.

1. **To Spain belong:** (1) **Cuba**, noted for its tobacco as well as its sugar. Its most populous part is in the west, where there are several railways, and where on a fine bay on the north coast is situated the capital, **HAVANA** (230), the only large town in the whole archipelago. (2) **Porto Rico**, in which coffee is the product next in importance after sugar.

2. **To Great Britain belong:** (1) **Jamaica**, south of eastern Cuba, in which, besides **sugar** and **coffee**, **pimento**[3] is an important product; chief port, Kingston, on the south coast. (2) **The Bahamas.** (3) **The Leeward Islands**,[4] composed of all the British Islands between Porto Rico and Dominica, and including the latter. The principal products of the group are sugar, limes, tamarinds, and arrowroot. (4) **The Windward Islands**,[4] consisting of all the islands between Martinique and Trinidad; principal, **Barbados**, the most densely populated of all the West India Islands, where accordingly the negroes are obliged to work in order to gain a subsistence. (5) **Trinidad**, an island about six times the size of Anglesey, opposite the delta of the Orinoco, with a rich soil in the west, producing **sugar** and **cacao**, and remarkable for the possession of a large asphalt lake in the interior.

3. **To France** belong the islands of **Guadeloupe** and **Martinique**, besides some smaller islands.

4. **To the Netherlands** belong the three considerable islands of **Curaçao**, **Aruba**, and **Bonaire**, or Buen Aire, along the north coast of Venezuela, besides two smaller islands and half of a third among those of the British Leeward group.

5. **To Denmark** belong Santa Cruz, St. Thomas, and one or two other islands among the Virgin group.

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[1] On the island of Porto Rico, no natives survived forty years after the advent of the Spaniards. [2] See p. 244. [3] Also known as *Jamaica pepper* and *allspice*.

[4] This use of the terms Leeward and Windward Islands is confined to Britain, and is quite inappropriate to the facts of the case. There is better justification for other two uses of the names adopted elsewhere. Some geographers apply the name Windward Islands to the Lesser Antilles, as being directly exposed to the trade-winds; that of Leeward Islands to the Greater Antilles. By others, again, the latter name is applied to the islands along the north coast of Venezuela.

SOUTH AMERICA.

Approximate latitudes: Caraccas (Saigon), 10° N.; Quito (Stanley Falls, middle of Sumatra), 0°; Rio de Janeiro, 23° S.; Buenos Ayres (Adelaide), 35°.
Approximate longitudes: 35° to 82° W.

South America has an area about twice that of Europe, and has its broadest part, in all four-fifths of its area, within the torrid zone. The **Andes** or **Cordilleras**, the longest chain of mountains in the world, traverses its whole length parallel to the west coast, with only one breach of its continuity, in lat. 51° S., near its southern extremity. The southern part of this system is single, unless the mountains of the islands that here fringe the Chilian coast be considered as belonging to the Andes; but north of that fringe two chains can generally be made out more or less distinctly, and about the point where the coast begins to trend north-westwards the main chains diverge most widely and enclose a table-land varying from 11,000 to 16,000 feet in height, and about 400 miles in breadth.[1] The chains again converge towards the equator, a little to the north of which the system divides into three, enclosing elevated valleys which gradually slope towards the north, and are drained by two rivers, the **Magdalena** and **Cauca**, which unite before falling into the **Caribbean Sea**. The greater part of the system is highly volcanic, and the whole coast which they face is subject to earthquakes. The highest summit in the chain is believed to be **Aconcagua**, about 32° S., which attains an elevation of more than 22,000 feet.

A short range running parallel to the north coast east of the Lower Magdalena takes the name of **Sierra Nevada** (or Snowy Sierra) **of Santa Maria**, from containing peaks clothed with perpetual snow, but it is the only range in South America not belonging to the Andes which reaches that limit. Two tablelands crowned with mountain ranges, whose general direction is also parallel to the nearest coast, occupy the north-east (Guiana and Venezuela) and the east, and between these and the Andes stretch the great plains of South America drained by the three great rivers, the **Orinoco**, the **Amazon**, and the **Paraguay** (of which last the Lower **Parana** forms a continuation). These rivers are all magnificent navigable streams. The **Orinoco**, which describes a semicircular course with one side prolonged to its mouth, is navigable for nearly 1,000 miles; the Parana and Paraguay are navigable continuously to the interior of Brazil; and the Amazon is more important than either in this respect, being navigable without interruption for 2,600 miles from its mouth, while 6,000 miles of navigation in all are afforded by the main stream and its tributaries. All the main tributaries of this river and the Paraguay, including the upper part of the course of the Parana, have their navigation more or less interrupted by falls and cataracts.

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[1] See section in diagram, p. 63.

The **climate** of South America is greatly affected by the chain of the Andes, the two sides of which present striking contrasts as regards rainfall and vegetation everywhere except in the extreme north. In the north copious rains with a rich tropical vegetation occur on both sides; the eastern plains of this region, forming the **Llanos** of the Lower Orinoco, are flooded during the rainy season (our summer), and during the dry season, before they become quite parched, present to view chiefly vast expanses of grass, though they are no longer so treeless as they were described by Humboldt in the early part of the present century.

The contrast of climate begins about 4° S. Thence to about 30° S. the east (trade) winds, which blow from the Atlantic for the greater part of the year, deluge the eastern slopes of the Andes with rain, and cover them with dense forests as high as trees can reach. Dense tropical forests (**selvas**) likewise occupy the valley of the Amazon to its mouth. South of the Amazon, however, the Brazilian coast mountains deprive the Atlantic winds of much of their moisture, so that the table-lands and plains intervening between them and the Andes (the **campos** of Brazil and the northern part of the **Gran Chaco**) have only a scanty rainfall. On the west of the Andes, between the latitudes mentioned, no rain whatever falls except high up on the mountain sides, and moisture appears on the low grounds only in the form of mist (**garua**). Vegetation is consequently scanty except beside the rivers, and for six or seven degrees north of 28° S. the strip of coast is a desolate wilderness. South of latitude 30° S., the contrast is opposite to that just described. There the prevailing winds are from the north-west, and bring plenteous rains from equatorial seas to the western slopes of the Andes, and still farther south to the lowlands at their base; while on the eastern side, the plains (the treeless **Pampas** of the Argentine Confederation and the bleak steppes of Patagonia) get drier and drier as one goes southwards. In this southern part, the western slopes of the Andes are as densely clothed with forests as the eastern slopes farther north; but the abundance of moisture has the effect of suddenly depressing the snow-line, which is between 8,000 and 9,000 feet lower behind the island of Chiloe (about latitude 40°) than it is seven degrees farther north.[1]

The **animal world** of South America is surprisingly different from that of the rest of the globe, even from that of the neighbouring continent on the north—one proof among others that the two halves of the New World were separated from each other by water down to a comparatively recent geological period. Here and here alone are to be found great numbers of **monkeys living entirely on trees** and provided with tails which can be used in grasping, **blood-sucking bats, sloths, armadillos, llamas**, and **alpacas**, a large number of gnawing animals like the rabbit (one of which, the **vizcacha**, burrows underground like the prairie-dog, and is as abundant in the plains of the south as the latter animal is in parts of North America), besides a greater variety of **parrots** and **humming-birds** than are found elsewhere. The latter birds are absolutely confined to the New World. The **rhea**, a peculiar kind of ostrich, is to be seen on the southern plains.

The **population** is still very scanty; according to the best estimate that can be formed, not more than 25,000,000, or about one-fifteenth of that of Europe. Four-tenths of the population are estimated to be native Indians, two-tenths whites, one-tenth negroes (chiefly in Brazil), and the remainder mixed races, so that on the whole the Indian element still largely predominates. The white population in Brazil is of Portuguese origin, but elsewhere, except in Guiana, chiefly of Spanish descent, almost the whole continent having been divided between Spain and Portugal early in the sixteenth century.

The enervating effect of the climate in the tropical portion of the continent has retarded the development of the immense resources of the land, notwithstanding the facilities presented by the navigable streams; and it is believed by some that Chinese labour alone can bring wealth and prosperity to these burning lands. In spite of the fact that the land has been so long in the hands of Europeans, it is said that there are not in all South America at the present day 100 miles of what in Europe would be called roads. **Railways** are now of more importance, and there are in Peru two of the most remarkable railways in the world, 'the railways in the clouds' as they have been called, since they ascend to the plateaux between the chains of the Andes, one from Lima to Oroya attaining a height of 15,600 feet.

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[1] See Intrcd. p. 53.

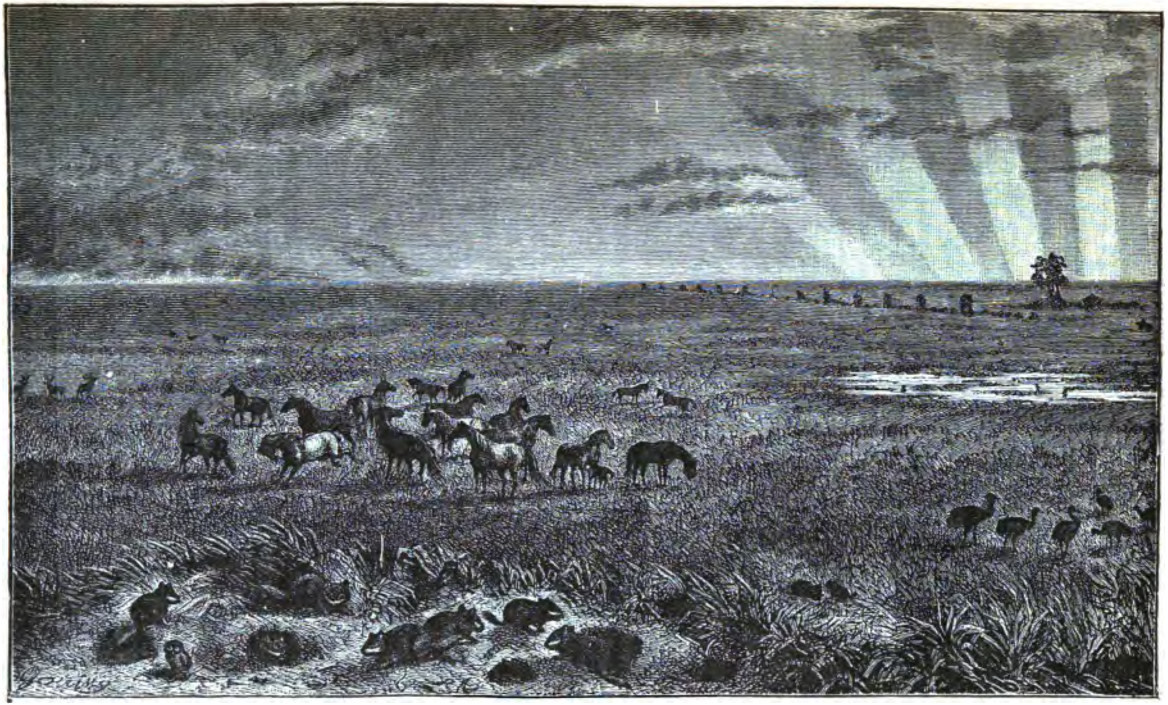

FIG. 57.—SCENE IN THE PAMPAS.
In the foreground, on the left, vizcachas; on the right, rheas. In the middle distance, on the left, pampas deer.

SOUTH AMERICAN STATES.

1. **BRAZIL**, on the east side of the continent, a state ruled by an emperor belonging to the Portuguese reigning family, since the yoke of the mother country was thrown off in 1822. In size it is the rival of the United States and Canada. (See table, p. 320.) The **population** is about 12,000,000, the great majority of whom are either negroes or partly of negro descent. Many of the negroes are still slaves, though **slavery** is in process of being abolished. The population is densest in the coast provinces south of the equator. The interior is chiefly occupied by wandering native tribes. In tropical Brazil are grown all kinds of tropical products, but the **great staples** are **manioc, coffee,**[1] and **sugar**, the two latter for export.

The poisonous tubers of the manioc, when bruised and heated, yield tapioca, the principal food of large numbers of the people. **Cacao and india-rubber**[2] are important products of the north. Among the hills in the portion of Brazil outside of the tropics (only about one-fifteenth of the whole), numerous **German colonies** have been founded and to these **Italian colonies** have more recently been added.

The principal towns of Brazil are on the coast. The capital is **RIO DE JANEIRO** (with suburbs, 275), situated on one of the most beautiful land-locked bays in the world, forming an excellent harbour. South of the equator the portion of the coast of Brazil exposed to the south-east trade-wind is flat, surf-beaten, and in many places bordered by sand-dunes;[3] and **BAHIA**, or San Salvador, and **PERNAMBUCO** are the only important seaports. The latter owes its origin to the protection afforded by a natural breakwater, or reef, which gives it another name, **Recife** (reef). North of the equator, the coast, like the whole of the north-east coast of the continent, is bordered by shallow mud-flats, generally bearing mangroves.[4]

2. Colonial **GUIANA**[5] consists of three portions—one British, about equal to Great Britain in size; one Dutch (**Surinam**); and one French (**Cayenne**), each of the two latter rather more than half the size of Great Britain.

They are all engaged in the production of **sugar**, rum, and molasses. The labourers are negroes, mulattoes, and coolies. The capital of British Guiana is **Georgetown**, at the mouth of the Demerara.

3. **VENEZUELA**, a federal republic in the north of the continent, consisting chiefly of the basin of the Orinoco; population

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[1] Half the coffee produced in the world, though not the best, is grown in Brazil.

[2] Obtained here chiefly from a tall tree allied to the manioc shrub, not from the twining plant from which it is obtained in Africa.

[3] See Introd. p. 25.

[4] See cut, p. 58.

[5] Part of Guiana belongs to Brazil and Venezuela.

more than 2,000,000, the majority of whom are settled on a small area in the north-west beyond the basin of the Orinoco, along the north and north-western slopes of the branch of the Andes, which here runs north-eastwards through the territory.

People of Spanish, Indian, and negro descent, all now free, make up the population. The staple product is **coffee**; but cacao, cotton, tobacco, and sugar, besides other tropical products, are grown. Gold and copper are important minerals. The llanos of the Orinoco are devoted to cattle- and horse-rearing, but the number of the live-stock has greatly declined compared with what it once was. Capital, **Caraccas**; chief ports, **La Guayra and Porto Cabello.**

4. COLOMBIA, a federal republic in the north-west, extending as far south as the equator, with a population of more than 5,000,000, chiefly settled in the upper parts of the valleys of the Cauca and Magdalena, where in consequence of the high elevation the grains of temperate climates are grown.

Bogota, the capital, at the height of 8,000 feet, has, though less than five degrees north of the equator, a very healthy climate, with a temperature like that of a perpetual spring. The **mineral wealth** is great, and gold and precious stones take a leading place among the exports, which also include Peruvian bark,[1] coffee, cacao, &c. The great channel of communication is the Magdalena, which is navigable as high as **Honda**, between 500 and 600 miles from its mouth. As yet there are few railways, but one of these is of high importance as forming the shortest connection between the shipping of the Atlantic and Pacific. The **Isthmus of Panama** belongs to Colombia, and here a depression in the mountains has allowed of the construction of a **railway** across the isthmus, at the height of 260 feet at the highest point, from **Colon**, or **Aspinwall**, on the Atlantic side, with its population of English negroes, to **Panama**, on the Pacific side, with its population of Spanish negroes. Through the same unhealthy depression an attempt is now being made to pierce a **ship-canal.**

5. ECUADOR,[2] a republic chiefly south of the equator, but which owes its name to the fact that its capital, Quito, is almost under that line. The population is little more than 1,000,000, nearly all settled on the plateau between the chains of the Andes.

Quito, situated at an elevation of between 9,000 and 10,000 feet, has a temperature all the year round like that of our May. The only port is **Guayaquil**, whence cacao, grown on the western lowlands, is exported. To Ecuador belong the **Galápagos**, or Turtle Islands, a group situated on the equator, about 700 miles to the west.

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[1] The bark of the cinchona tree, from which quinine, a valuable drug, is obtained.

[2] Spanish = Equator.

6. PERU, a republic lying to the south of Ecuador, with a population of about 3,000,000, at least half of whom are pure Indians. It is composed of three zones—(1) a barren **coast-strip** fertilised only here and there by rivers from the Andes, on the banks of which sugar plantations are tended by Chinese coolies; (2) the **sierra,** or valleys and table-lands of the Andes; on one of the highest of the table-lands lies **Lake Titicaca,** the largest lake in South America, at the height of 12,600 feet above the sea; and (3) the **Montaña,** the region on the eastern slopes of the Andes, containing the head-waters of the Amazon, a region largely covered with impenetrable forests, of which the most valuable product is **Peruvian bark.** There are valuable **silver** mines and deposits of **guano**[1] and **nitrate of soda.**

FIG. 58.—SCENE IN HONDA, COLOMBIA. (By the kind permission of Messrs. Hachette.)

The guano and nitrate of soda, which are both used for manure, are found on the coast-strip, the rainlessness of which (see p. 301) has allowed of the accumulation of these deposits. The silver mines belong to the Andes, the principal being at **Cerro de Pasco,** the highest town in the world—upwards of 14,000 feet above sea-level.

The capital is **LIMA,** an unhealthy city on the coast strip, a few miles from its port, **Callao.**

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[1] Guano consists of the droppings of sea-birds.

Before its conquest by the Spaniards, under Pizarro in 1532, the empire of Peru, now one of the worst governed republics of South America, was the centre of the empire of the Incas, which extended over a large part of South America, and was in some respects even more remarkable than that of the Aztecs of Mexico. Under it the country was provided with fine roads, aqueducts, and irrigation works (some of which can be utilised at the present day); and the government, though highly despotic, regulating the whole life of the people, was yet a mild despotism, and one that ensured the well-being of its subjects. Remarkable architectural monuments of this empire still survive at **Cuzco**, the residence of the Incas, as well as round Lake **Titicaca** and elsewhere.

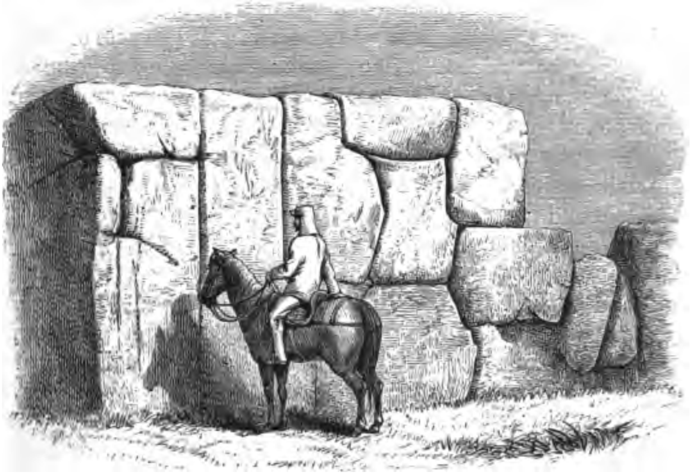

FIG. 59.—FRAGMENT OF AN OLD PERUVIAN WALL, CUZCO.
(By the kind permission of Messrs. Hachette.)

7. **BOLIVIA**, formerly called Upper Peru, takes its present name from Bolivar, the leader in the movement by which the Spanish states in South America threw off the yoke of the mother country. It is now entirely an inland state occupying the broadest part of the table-land of the Andes, with a **montaña** to the east. The Bolivian montaña is drained by the **Madeira**,[1] the principal tributary of the Amazon on its right bank, but this tributary has its navigation interrupted by falls and rapids for about 200 miles between Bolivia and Brazil.

The silver mines of **Potosi**, which made Peru so valuable a possession to the Spaniards, belong to this state and are still productive, though they no longer yield such enormous quantities of the precious metal as they supplied in former times. The chief towns of the republic are **La Paz**, on the table-land of Lake Titicaca (part of which belongs to Bolivia), and **Sucre**, near the eastern borders of the Andes.

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[1] So called on account of the forests which it traverses. See p. 276 *n.* 3.

8. **CHILE**, a republic possessing the whole of the coast strip south of Peru, together with the islands that fringe that coast, including part of Tierra del Fuego and all the land on both sides of the Straits of Magellan. The **Araucanians**, a warlike native tribe, which long maintained its independence, have now been subdued, and their territory incorporated with that of the republic. The northern portion of the country is part of the desert strip of South America, which owes all its value to its deposits of nitrate of soda. The middle portion (between about 33° and 38° S.) contains the bulk of the population, among whom whites predominate. The field products are **wheat** and southern fruits, and wheat forms a considerable export. The mountains yield metals, especially **copper**. The country is, on the whole, one of the best governed and most progressive of the Spanish republics.

The capital is **Santiago**, on a fertile plain, the chief port **VALPARAISO**, built on a fine bay looking towards the north.

9. **ARGENTINE CONFEDERATION**, a federal republic occupying a territory of more than 1,000,000 square miles, with a population of about 3,000,000. Its territory consists of a vast plain sloping down to the Atlantic from the mountains in the west and north-west, and the provinces in which the population is most considerable and most rapidly increasing are chiefly those in the neighbourhood of the estuary of La Plata and along the banks of the Lower Parana.

In the pampas of the province of **Buenos Ayres**, south of that estuary, in **Cordoba** to the north-west, and in **Entre Rios**, 'between the rivers' Parana and Uruguay, the dominant industry of the whole Confederation, the rearing of sheep and cattle, is chiefly carried on. In the production of **wool**, the Argentine Confederation ranks next after Australia. Along with wool, dried flesh (charqui), hides, &c., are the principal exports. Vast herds of cattle and horses roaming over unfenced prairies are managed by mounted shepherds called **Gauchos**, expert in the use of the lasso. In the **province of Santa Fé**, on the right bank of the Parana, tillage is rapidly extending, through the foundation by immigrants of agricultural colonies, which have of late years raised the Confederation to the rank of a **wheat-exporting** state.

Patagonia, which is included in the territory claimed by the Argentine Confederation, is mainly a stony desert, on which a few Indians (remarkable for their high stature) live by hunting the rhea and guanaco and by fishing.

The capital of the Confederation is **BUENOS AYRES**, on the shallow, nearly tideless estuary of La Plata,[1] which has silted up so rapidly since the foundation of the city by Mendoza in 1535, that large vessels have to anchor several miles out, and recently a new port, **Ensenada**, has been founded nearer the mouth of the estuary.

10. URUGUAY, a republic lying north of the estuary of La Plata, in which the chief occupations of the people are the same as in the Argentine Confederation. Agriculture is increasing since the land has been to a large extent enclosed by wire fences. The inhabitants are mainly of European origin, with little admixture of negro or Indian blood.

The capital is **MONTEVIDEO**, which has the best accommodation for shipping on the La Plata, but is less favourably situated than Buenos Ayres for internal trade. The small towns of **Fray Bentos** and **Paysandu**, on the Uruguay, have both become well known in Europe through their exports; Fray Bentos being the seat of manufacture of Liebig's extract of meat, and Paysandu of immense quantities of preserved meat.

11. PARAGUAY, an inland republic lying mainly between the Paraguay and Parana rivers, with a very sparse population, chiefly of native Indians.

Its chief product is the so-called **Paraguay tea**, or **mate**,[2] which is generally used in the southern parts of South America as a substitute for tea and coffee, and is also grown in the neighbouring states to the south.

The islands of **Tierra del Fuego**, with a cold and dripping climate, are inhabited by a small number of natives in the lowest stage of barbarism. The **Straits of Magellan**,[3] by which they are separated from the mainland, are stormy and washed by strong tides and hence difficult of navigation, so that sailing vessels still prefer the equally stormy, but, for them, less dangerous, route round Cape Horn.

The Falkland Islands, situated to the east of the Straits of Magellan, belong to the British. They have a damp, foggy climate, and are largely covered with peat, but are inhabited by a small number of settlers, engaged in the rearing of sheep and cattle. They are frequently visited for repairs and supplies by vessels that have made the passage round Cape Horn.

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[1] Even at the mouth of the estuary to the south of Montevideo, the depth is nowhere greater than thirty-six feet. The rise of the tide is from four to six feet. Greater differences in the level of the water of the estuary are sometimes produced by winds—continued southerly winds causing a rise of eight feet above the ordinary level; continued northerly winds a fall of four feet.

[2] Derived from a bush allied to the holly.

[3] So called because discovered and first navigated by a Portuguese navigator named Magalhaens in the first voyage round the world (1519–21). Magellan is the Spanish form of the name, and has been generally adopted because at the time of the voyage this seaman was in Spanish service.

AUSTRALIA AND OCEANIA.

AUSTRALIA.

Approximate latitudes: (mouth of Rovuma river, Africa), northernmost point, Cape York (mouth of San Francisco, South America), 11° S.; Adelaide (Buenos Ayres), 35° S.; south point, (Bahia Blanca, South America), 39° S.
Approximate longitudes: 113° to 153° E.

THIS vast island, nearly three millions of square miles in extent, or about thirty-three times the size of Great Britain, presents most resemblance to Africa in the nature of its coast-line and surface. Its **coast-line** is remarkably regular, though it has in certain parts (especially the north-west and north-east) a greater number of small indentations than any considerable part of the coast of Africa. The chief gulfs are **Carpentaria**, in the north, between York Peninsula and Arnhem Land, and **Spencer** and **St. Vincent Gulfs**, directly opposite in the south. The **surface** is for the most part a level plateau, the edge of which generally descends rather abruptly either to the sea or to a comparatively narrow strip of low land bordering the sea. The height of the plateau is about 1,000 feet, and the higher edge (about 2,000 feet) is on the east. On the south-east a chain of mountains rises in more than one peak to upwards of 7,000 feet in elevation.

This structure of the land, together with the situation in warm latitudes, causes the interior of Australia to be **one of the most arid regions of the earth.** In winter, when the pressure of the air is high over the interior, the winds blow chiefly from the land seawards, and in summer, when the winds blow from the sea towards the land, the hot air retains as vapour such moisture as is not condensed on the edge of the plateau.[1] Nevertheless occasional rains do fall in the interior, and in such quantity as to fill wide watercourses, which have been met with in different parts by explorers. This accounts for the occurrence in the interior of great quantities of underground water, which in some places it is possible to bring to the surface by means of Artesian wells.[1] The east coast strips are those which are most plentifully supplied with rain, which is brought by east, north-east, and south-east winds chiefly in the Australian summer. In the north and north-east of the island, the rain-bringing winds are true monsoons,[2] and the rains are as abundant as in other tropical countries. The south-west of Australia is the only part that receives winter rains, brought by north-west winds corresponding to the south-west winds of Western Europe.

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[1] See Introd. pp. 50, 52 (8) (*a*), and comp. Spain, p. 194.

The **Murray River**, in the south-east, is the only important river of the interior which reaches the sea, and, though three times as long as the Rhine, it is not navigable for any great distance above its mouth, except during the rainy season, and then only for vessels of light draught. Its tributaries, the **Darling** and **Murrumbidgee**, both on its right bank, are also navigable for only a portion of the year. Most of the rivers of the interior are only temporary torrents, and dry up in salt plains, or terminate in shallow salt lakes, some of which entirely disappear at times by evaporation.

The **vegetation** and animal life of Australia are highly peculiar—so different from those of the rest of the world as to show that this great island cannot have had any land connection with the Asiatic continent within a recent geological period.[3] The **characteristic trees** of the island are many different kinds of **eucalyptus**,[4] some of which grow to a greater height than even the tallest giants of the Sierra Nevada. They do not, however, grow, like these latter trees, in dense forests, but are somewhat thinly scattered over the surface. Their roots are long, so as to be able to draw up moisture from a considerable depth; their leaves narrow, and are attached in such a manner that their edges are above and below instead of sideways. In this position they are not so apt to give off vapour as the leaves of trees of moister climates, and their texture also fits them in several ways to retain moisture.[5] In many parts of the interior dense thickets of bushes or low trees (**scrub**), sometimes thorny, form an almost impenetrable barrier to progress. On some of the salt plains grows a shrub known as the **salt-bush**, a valuable fodder-plant.

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[1] See Introd. p. 30, and comp. p. 269.

[2] See Introd. pp. 42, 51.

[3] Comp. pp. 72 and 277.

[4] Popularly called in Australia 'gum-trees.'

[5] Comp. the Mediterranean region, p. 68; also Introd. p. 59.

True forests (mostly with a dark and gloomy foliage) are found chiefly on the well-watered slopes of the eastern mountains.

Among **animals**, Australia possesses, in place of the mammals of the great continents, a great variety of **marsupials**, a group scarcely met with outside of the Australasian region.[1] From other mammals this group is distinguished by the fact that in most species the female has a pouch in which it carries about its young for some time after birth. The best known member of the group is the kangaroo. The native Australian dog, the **dingo,** is not a marsupial, but was probably introduced at some remote period by man. There are no monkeys even in the tropical parts of Australia, but **parrots** and **cockatoos** abound, and a running bird, the **emu**, resembling the ostrich of Africa and the rhea of South America, scours the plains.

The native Australians, a dark-coloured race, are said to be gifted with no little intelligence, but owing to the entire absence of cereals and other plants suited for agriculture and of domestic animals yielding milk before the arrival of Europeans, were condemned to live as hunters, and hence never made any advance in civilisation. The present inhabitants are mainly English (partly German) colonists. The colonisation of the island began in 1788, after the eastern coasts had been surveyed by Captain Cook, and the first people settled here were convicts. Free colonists first began to settle in great numbers after the discovery of rich **gold** deposits in the south-east in 1851, but the great and growing wealth of Australia consists in its **sheep pastures**, no other part of the world being so well adapted for the production of **wool.**

Sheep rapidly improve in quality when introduced into Australia, and at a recent date this island was estimated to produce nearly one-fourth of the wool supply of the world, though having less than one-sixth of the total number of sheep. On an average, the Australian sheep are calculated to furnish nearly twice as great a weight of wool as those of Europe.

Politically, Australia is now divided among **five British colonies**, the government of which is in most cases modelled on that of the mother country. By an act passed in 1885 the

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[1] The opossums of America belong to this group, which, however, has no living representatives in Europe, Asia, or Africa.

Australasian colonies, including New Zealand, Tasmania, and Fiji, are authorised to form a federation, the council of which is to have the right of dealing with matters of common interest, the most important of which is that which concerns the relations of the Australian colonies to the islands of the Pacific. So far the only colonies which have joined the federation are Victoria, Queensland, Tasmania, West Australia, and Fiji.

The names of the Australian colonies, with other particulars, are given in the following table:—

Colonies	Area in thousands of square miles	Ratio to Great Britain	Population in thousands			Increase per cent. between 1871 and 1881
			Census of 1871	Census of 1881	Estimated 1884	
Victoria . . .	88	1	732	862	961	17
New South Wales .	309	3½	504	751	921	49
Queensland. . .	668	7½	120	214	310	81
South Australia . .	903	10	186	280	313	50
West Australia . .	976	11	25	30	32	24

1. **VICTORIA**, the south-easternmost colony, separated from New South Wales in 1850, produces, besides wool and gold, wheat and wine.

Capital, **MELBOURNE** (280), on the Yarra Yarra, a short distance above its mouth, in Port Phillip Bay. It was founded on an uninhabited site in 1835, just after the discovery of rich pastures in the neighbourhood of that inlet. In the interior, north-west of Melbourne, **Ballarat**, the centre of the declining gold-digging region of Victoria, and **Sandhurst**, the growing centre of the region in which gold is obtained by the crushing of quartz.

2. **NEW SOUTH WALES**, north of Victoria, the chief wool-producing colony, produces also gold and coal, maize as well as wheat, and in addition wine and a little sugar.

Capital, **SYDNEY** (220), founded in 1788, and hence the oldest city in Australia. It occupies a number of small peninsulas running out into the magnificent harbour of Port Jackson, an inlet about fifteen miles in length with sinuous rocky shores, and with a mouth about a mile wide, within which the sea has the aspect of an inland lake, not surpassed in beauty even by the tropical harbour of Rio de Janeiro, which is to some extent its counterpart. To the north, **Newcastle**, centre of the coal trade of the colony. In the interior, **Bathurst**.

3. **QUEENSLAND**, north of New South Wales, has its population chiefly gathered in the south-east, where sheep and cattle-rearing and the cultivation of maize are the chief industries, but

has other settlements farther north where sugar and other tropical products are grown on plantations cultivated by labourers introduced from the small islands of the Pacific.

Capital, **Brisbane**, on the river of the same name, at the head of navigation for sea-going vessels.

4. **SOUTH AUSTRALIA** does not answer to its name, but extends from south to north to the west of the three colonies already mentioned. **Wheat** is more extensively grown here than in any other colony, but produces a small return (only about seven bushels to the acre).[1] The quality is, however, excellent. There are valuable **copper** mines in the barren peninsula between Spencer and St. Vincent Gulfs.

Capital, **Adelaide**, east of the Gulf of St. Vincent, built 'on the only spot upon the coast where vessels have a safe basin in which to load alongside a wharf.'[2]

5. **WEST AUSTRALIA** has its small population settled chiefly in the south-west, but has a large territory in the north reported to be well suited for pastures. Capital, **Perth.**

THE AUSTRALASIAN ISLANDS.

1. **TASMANIA**, a mountainous island less than one-third of the size of Great Britain, forming a British colony to the south of Victoria, from which it is separated by the shallow **Bass Straits.** Its native population has died out. Besides the staple agricultural products of Victoria, it produces great quantities of hops and **orchard fruits.** There are rich **tin** mines in the north-west.

Capital, **Hobart Town**, on a fine harbour, formed by the estuary of the Derwent, in the south of the island. It is connected with **Launceston**, in the north, by a railway running through a depression dividing the island into two unequal portions.

2. **NEW GUINEA**, separated from Queensland by **Torres Straits**, which are like Bass Straits, shallow, is the largest of the islands between Australia and the continent of Asia (about three and a third times as large as Great Britain). It is largely mountainous, and some of its mountains are volcanoes. Like all the islands to the east of Bali, which is separated by a very deep

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[1] Comp. Great Britain, p. 76 n. 1, and Canada, p. 284.

[2] Froude, *Oceana.*

strait[1] from Lombok, it has plants and animals more closely allied to those of Australia than the Asiatic continent, but owing to its tropical situation in the course of the monsoons, it has dense forests. These are haunted by many beautiful and gay-plumaged birds, among others the bird of Paradise. The island is the home of the **Papuans**, a very dark-skinned race with black curly hair growing in numerous tufts. They dwell in villages, the houses of which are built on stakes along the margin of the sea-coast or the rivers, and are connected with the mainland by a bridge.

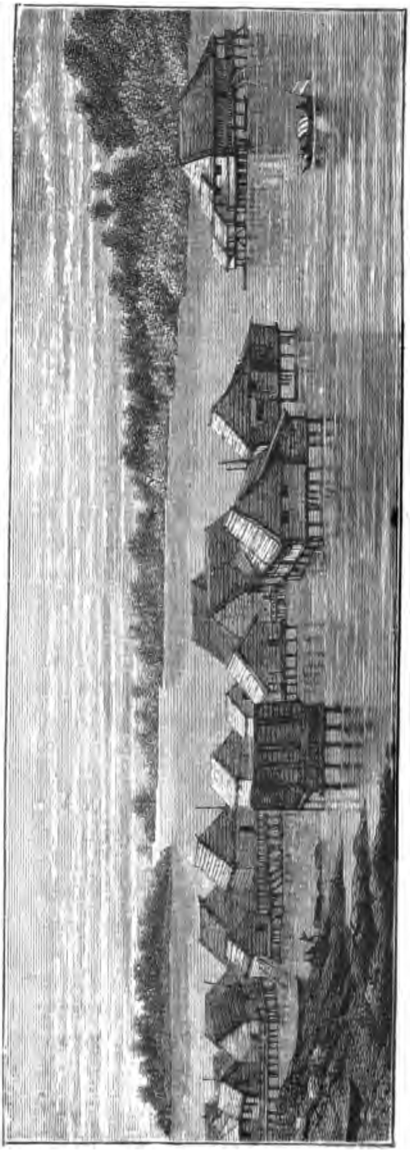

Fig. 60.—Pile-dwellings at Samboangan (Philippine Islands).

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[1] This strait forms part of what is known as Wallace's Line, which, as was pointed out by the naturalist A. R. Wallace, divides two groups of islands, one of which was probably connected at one time with the mainland of Asia and has plants and animals more nearly allied to those of the Asiatic continent, and the other probably with Australia.

Three European Powers—the Dutch, British, and Germans—now claim a protectorate over different parts of the island; the Dutch in the west, the Germans in the north-east (Kaiser Wilhelm's Land), and the British in the south-east.

Pile-dwellings similar to those inhabited by the Papuans of New Guinea are very widespread. They are in very general use among the Malay races, and have been met with also in New Zealand, in Central Africa, on the coasts of both North and South America; and remains of similar dwellings belonging to pre-historic times are known in Switzerland, Scotland, and Ireland. The example shown in the cut belongs to the Eastern Archipelago.

3. The name of **Melanesia** is applied to several groups of small islands to the east of New Guinea also inhabited by Papuans.

The islands of New Britain, the Solomon Islands, the New Hebrides, and New Caledonia, follow one another in succession. **New Britain**, and the other islands now forming the **Bismarck Archipelago**, belong to Germany, and **New Caledonia** has been used for upwards of thirty years by the French as a place of deportation for convicts and political offenders.

4. **NEW ZEALAND**, a group of islands lying to the east of Australia, and forming the Great Britain of the South Seas. In latitude they correspond with Italy in the northern hemisphere; but their climate, in consequence of the comparative coldness of the Southern Ocean, corresponds more nearly with that of Great Britain, as is shown by the fact that oats is the principal crop grown in addition to wheat. The total area is about one-sixth larger than Great Britain. There are two principal islands, **North Island** and **South Island**, separated by the tempestuous **Cook's Strait.** The North Island is to a large extent volcanic, having active volcanoes from 8,000 to 9,000 feet in height, solfataras,[1] and remarkable hot springs and geysers (at Rotomahana and elsewhere). The South Island is traversed from north to south by a chain of mountains called the Southern Alps, with peaks above 12,000 feet in height, and, like the Alps of Europe, rich in glaciers.

In the vegetation of the islands, ferns, including **tree-ferns**, are very conspicuous, and before the arrival of Europeans to a large extent took the place of the grasses of other temperate countries.

The **New Zealand flax** plant yields a strong fibre which is used as a substitute rather for hemp than for flax. The **kauri**

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[1] Solfataras are volcanic vents emitting only gases, chiefly sulphurous gases.

pine, a native of North Island, yields the finest timber and a valuable resin. The minerals include **coal** and **gold.** Since 1840 the islands have been in the hands of British colonists, who in 1881 numbered nearly half a million;[1] but about 44,000 **Maoris,** an intelligent native race of Malay type, occupy land reserved for them in North Island, and have been partly Christianised. The principal occupations of the colonists are sheep-rearing, the growing of cereals, and gold-mining. Sheep are relatively as numerous here as in New South Wales.

All the islands are under one government. The capital is **Wellington,** in North Island, on Cook's Strait. **Auckland,** on the narrowest part of the same island, is a great centre of shipping and marine commerce. In the South Island are **Christchurch** and **Dunedin,** both on the east coast: the former to the north of the Canterbury plains, a strip of lowlands about a hundred miles in length rising in terraces to the base of the mountains; the latter on a fine natural harbour in the province of Otago.

POLYNESIA.

This name is applied to all the small islands of the Pacific Ocean with the exception of those already mentioned. They are mostly coral islands, and hence flat,[2] but some (those generally of greater size) are of volcanic origin and mountainous. They are almost all situated within the tropics, and the chief food of the people is derived from tropical trees, such as the **coco-nut, banana,** and **bread-fruit,** or the tropical tubers, **yams** and **taro.**[3] The people belong to a race with a clear brown skin and smooth hair, and are a branch of the great Malay stock, to which the Maoris also belong. Christianity has been introduced with considerable success on many of the islands either by Protestant or Roman Catholic missionaries.

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[1] In 1871 their number was not much more than a quarter of a million.

[2] See Introd. p. 33 *n.* 1.

[3] The *bread-fruit* is the fruit of a tree confined to the tropics. The fruit weighs from three to four pounds, and the tree is so productive that two or three trees are said to be capable of supporting a man for a year. The *banana* grows not only within the tropics, but also five or six degrees beyond them, and is at least equally productive with the bread-fruit. Many different kinds are cultivated, both in the Old World and the New. The *yam* is a climbing plant with tubers or underground stems from twelve to twenty inches in length, and four to six inches in thickness. Like those of the manioc (see p. 304), they are injurious when eaten raw. So also are those of the *taro,* a plant cultivated not only for its tubers, but also for the sake of its leaves, which are eaten as vegetables.

Fiji Islands, a group of volcanic islands situated to the north of New Zealand, bisected by the parallel of 18° S., and having a total area rather larger than that of Wales. The group now forms a British Crown colony, with a population of 130,000, including a small number of Europeans, chiefly sugar-planters. Chief town, **Levuka.**

The **Tonga** and **Samoan**, or **Navigator Islands**, lie to the east, and still farther east are the **Society** and **Low Islands. Apia,** on one of the Samoan Islands, is the centre of the German trade with the Pacific islands, the chief product of which for European trade is *copra*, or the dried kernel of the coco-nut. The Society Islands, the chief of which is the charming volcanic island of **Tahiti,** are under French protection, and so also are the Low Islands and the **Marquesas** group, to the north of the latter.

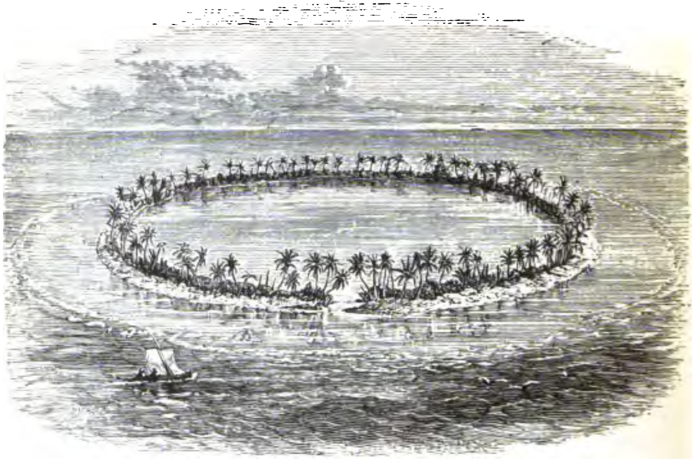

FIG. 61.—AN ATOLL OR RING-SHAPED CORAL ISLAND WITH COCO-NUT PALMS.

Between the equator and 15° N. are the **Pelew, Caroline,** and **Marshall Islands**, in that order from west to east, and south of the last-mentioned group the **Gilbert Islands.** The first two of these groups belong to Spain, the others to Germany. To the north of the Caroline Islands is the Spanish group of the **Marianne** or **Ladrone** Islands.

The **Sandwich Islands** are an important group of volcanic islands nearer the coast of North America, between 19° S. and the tropic of Capricorn. Their total area is rather less than that of Wales. The chief island is **Hawaii,** on which the extinct volcano of Mauna Kea rises to the height of nearly 14,000 feet.

Farther south is the active volcano of Mauna Loa, with the vast so-called crater of Kilauea—a depression about 3½ miles in length by 2½ miles in breadth, formed by the dropping in of the roof of a cavity filled with molten lava.

The population is under 100,000, a considerable proportion of whom are of European origin, and own sugar, cotton, and other plantations, which they cultivate by means of Chinese and native labourers. The natives chiefly cultivate taro on terraced hill slopes. The government is a constitutional monarchy, under a native king, but under foreign influence. The capital is **Honolulu**, on the island of Oahu.

ANTARCTIC REGIONS.

Compared with the Arctic regions, those round the Antarctic pole are remarkable for the uniformity of their low temperatures. To the south of 62° S. the mean temperature of both sea and air is at or below the freezing point of fresh water even in summer. Still nearer the south pole, ice barriers have stopped the advance of explorers at a latitude about five degrees lower than that attained in the Arctic regions. The highest latitude ever reached in southern seas was 78° 10′ S., the latitude at which the progress of Sir James Ross was arrested in 1842, after he had sailed along an icy barrier about 300 miles in length and from 150 to 200 feet in height. He had previously sighted land, the coast of which he traced from the parallel of 72°. To this land, the most extensive that has been seen in the Antarctic regions, he gave the name of **Victoria Land**, and on it he observed in the course of his voyage an active volcano, **Mount Erebus**, nearly 13,000 feet in height. But though Victoria Land is the most extensive piece of Antarctic land that has actually been seen, the swarms of icebergs in Antarctic seas, and the deposits of terrestrial origin that have been found in the vicinity of the ice-barriers of the south, afford the clearest evidence of the existence of an Antarctic continent.

AREA AND POPULATION IN ROUND NUMBERS OF THE PRINCIPAL STATES OF EUROPE AND THE MORE POPULOUS COUNTRIES OF OTHER CONTINENTS.

	Area in thousands of square miles	Ratio to Great Britain	Population in millions about 1870	Population about 1870 per square mile	Population in millions about 1880	Population about 1880 per square mile
Australian Colonies. See p. 313						
Austrian Empire	242	2⅔	36	150	38	157
Belgium	11 4	⅛	5	450	5·5	487
Brazil	3,200	36	10	3	12	4
Canadian Dominion	3,470	39	3·7	1·1	4·3	1·3
China (proper)	1,550	17	—	—	—	—
Denmark	15·4[1]	⅙	1·8	120	2	128
Egypt	13[2]	1/7	5·2	406	6·8	530
France	206	2⅓	36	175	38	185
German Empire	20	2⅓	41	197	45	217
Bavaria	2	⅓	4·8	166	5·3	180
Prussia	134	1½	25	185	27	200
Saxony	5·8	1/15	2·5	440	3·0	515
Würtemberg	7·5	1/12	1·8	240	2·0	260
Greece	25	⅖	1·5	75	2	80
India[3]	1,290	14⅓	—	—	250	194
British India[4]	781	8⅔	183	234	195	250
Italy	111	1¼	27	243	28·5	257
Japan	150	1⅔	33	220	37	247
Mexico	750	8½	—	—	10	13
Netherlands[5]	12·5	1/7	3·5	280	4	315
Norway	126	1⅖	1·8	14	1·9	15
Portugal	34	⅓	—	—	4·1	120
Roumania	51	5/9	—	—	5·4	106
Russia[6]	2,080	23	74	36	85	41
Servia	19	⅕	—	—	1·8	97
Spain	196	2⅙	—	—	17	88
Sweden	174	2	4·0	24	4·6	26
Switzerland	16	⅕	2·7	170	2·8	177
Turkey in Europe	59	⅔	—	—	4·5	70
Bulgaria	25	⅖	—	—	2·0	80
Eastern Roumelia	15	⅙	—	—	0·8	55
United Kingdom	121	1⅓	32	260	35	290
United States[7]	3,000	33⅓	39	13	50	17

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[1] Exclusive of Iceland, but inclusive of Faroe Islands.

[2] Exclusive of desert.

[3] Exclusive of British Burma and of Kashmir, Nepal, and Bhutan.

[4] Exclusive of British Burma.

[5] Exclusive of Luxemburg.

[6] Including Finland.

[7] Exclusive of Alaska.

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